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Measuring student engagement in upper elementary through high school: a description of 21 instruments

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Measuring student engagement in upper elementary through high school: a description of 21 instruments

January 2011

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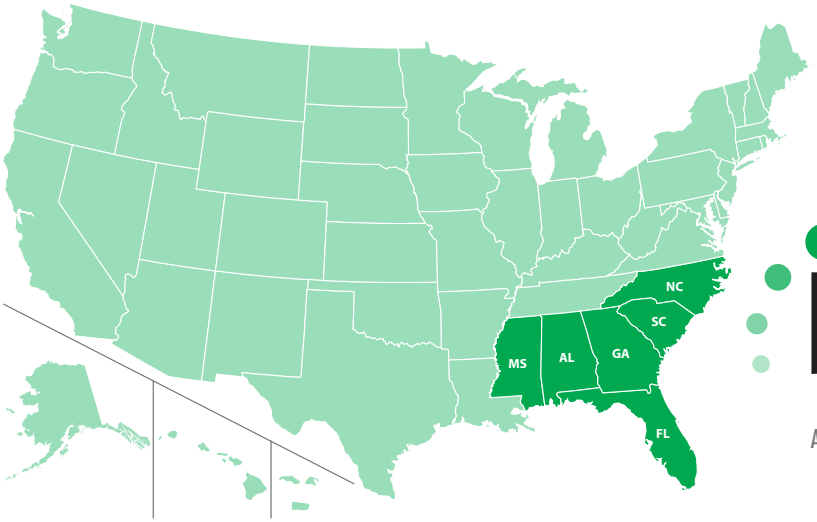

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Summary

REL 2011–No. 098

Measuring student engagement in upper elementary through high school: a description of 21 instruments

This report reviews the characteristics of 21 instruments that measure student engagement in upper elementary through high school. It summarizes what each instrument measures, describes its purposes and uses, and provides technical information on its psychometric properties.

Researchers, educators, and policymakers are increasingly focused on student engagement as the key to addressing problems of low achievement, student boredom and alienation, and high dropout rates (Fredricks, Blumenfeld, and Paris 2004). To increase student engagement, educators and evaluators need to understand how engagement has been defined and to assess the options for measuring it. However, instruments for measuring engagement are not easily accessible as a group in a way that allows for comparison because they arise from different disciplinary perspectives and theoretical frameworks.

This report summarizes the characteristics of instruments that measure student engagement in upper elementary through high school, providing information on the range of instruments available. It is not a technical review of the quality of these measures.

The findings are organized in response to two questions addressed by the study:

- What instruments are available to measure student engagement in upper elementary through high school?
- What are the characteristics of each identified measure?

The report describes the results of a literature review to identify available instruments. The 21 instruments identified are described according to what is measured, their purpose and use, and the technical information available on their psychometric properties. The instruments include 14 student self-report instruments, 3 teacher reports on students, and 4 observational measures

- *What is measured.* The constructs assessed can be described by the extent to which the instruments represent the multidimensional nature of engagement (behavioral, emotional, and cognitive) and the object of engagement. Of the 14 *student self-report instruments* described, 5 assess all three dimensions of engagement, 5 assess two dimensions, and 4 assess one dimension. Nine are worded to reflect general engagement in school, and five are

worded for use at the class level. Two of the three *teacher report instruments* can be used by teachers for reporting on student engagement in any subject and the third for reporting on engagement in reading. Two of the four *observation measures* provide a coding system for observing an individual student's on- and off-task behavior or engaged time in classroom settings, and two assess classroom engagement across all students in the class.

- *Purpose and use.* The 21 instruments have several different purposes and uses, including research on motivational and cognitive theories of learning; research on disengagement and dropping out; evaluation of school reform efforts and interventions; monitoring of engagement at the teacher, school, or district level; diagnosis and monitoring at the student level; and needs assessment of students' developmental assets (the relationships, opportunities, and personal qualities that young people need to avoid risks and enhance positive outcomes).

- *Technical information on psychometric properties.* Reliability and validity information was found for all but one instrument. Overall, developers reported internal consistency results for student self-report and teacher report measures that were at or near acceptable levels for use, ranging from .49 to .93, with most scales at .70 to .80. Substantial information was also available on validity. For example, 13 measures had positive correlations with measures of student achievement. This report does not judge whether the technical information accessed is sufficient for any particular use of an instrument.

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ABBREVIATIONS

4-H	4-H Study for Positive Youth Development: School Engagement Scale
ATM	Attitudes Towards Mathematics
BOSS	Behavioral Observation of Students in Schools
CCSR/AES	Consortium on Chicago School Research/ Academic Engagement Scale
CEEP	Center for Evaluation and Education Policy
EBASS	EcoBehavioral Assessment Systems Software
EvsD	Engagement versus Disaffection with Learning
HSSSE	High School Survey of Student Engagement
IES	Institute of Education Sciences
IPI	Instructional Practices Inventory
IRRE	Institute for Research and Reform in Education
ISQ	Identification with School Questionnaire
MES	Motivation and Engagement Scale
MS-CISSAR	Code for Instructional Structure and Student Academic Response
MSLQ	Motivated Strategies for Learning Questionnaire
NCSE	National Center for School Engagement
NSSE	National Survey of Student Engagement
PSL–AB	Profiles of Student Life: Attitudes and Behaviors Survey
RAPS	Research Assessment Package for Schools
REI	Reading Engagement Index
SEI	Student Engagement Instrument
SEM	School Engagement Measure
SEQ	School Engagement Scale/Questionnaire
SSES	Student School Engagement Survey
SSP	School Success Profile

This report reviews the characteristics of 21 instruments that measure student engagement in upper elementary through high school. It summarizes what each instrument measures, describes its purposes and uses, and provides technical information on its psychometric properties.

WHY THIS STUDY?

Researchers, educators, and policymakers are focusing more on student engagement as the key to addressing low achievement, student boredom and alienation, and high dropout rates (Fredricks, Blumenfeld, and Paris 2004). As schools and districts seek to increase engagement, it is important for them to understand how it has been defined and to assess the options for measuring it.

One challenge educators and evaluators face in measuring engagement is determining the appropriateness of the available instruments, especially given limited time to review the literature. Instruments for measuring engagement also reflect different disciplinary perspectives and theoretical frameworks and are thus not easily compared.

To address the information needs of education professionals, this report describes the 21 instruments for measuring engagement in upper elementary through high school identified through a literature review. The report does not include a technical review of the quality of each measure, nor does it recommend or identify strengths or weaknesses of particular instruments.

What is student engagement?

Interest in student engagement has grown over the past two decades, although there is substantial variation in how it has been defined and measured. Early studies defined student engagement primarily by observable behaviors such as participation and time on task (Brophy 1983; Natriello 1984). Researchers have also incorporated emotional or affective aspects into their conceptualization of engagement (Connell 1990; Finn 1989). These definitions include feelings of belonging, enjoyment, and attachment. More recently, researchers have studied aspects of cognitive engagement, such as students' investment in learning, perseverance in the face of challenges, and use of deep rather than superficial strategies (Fredricks, Blumenfeld, and Paris 2004). Some have also included self-regulation (the extent to which students demonstrate control over their learning actions) as a component of cognitive engagement (Pintrich and DeGroot 1990; Miller et al. 1996).

Researchers have proposed theoretical models suggesting that student engagement predicts

Inclusion of engagement as a goal of school improvement, growing awareness of the connection between disengagement and dropping out, and use of engagement as a program or intervention outcome all help explain the increased interest in understanding and collecting data on engagement

subsequent achievement and success in school. One of the earliest theories of engagement was the participation-identification model (Finn 1989). This theory defines engagement in school as "having both a behavioral component, termed *participation,* and an emotional component, termed *identification* [emphasis in original]" (Finn and Voelkl 1993, p. 249).

Another influential model was developed by Connell and his colleagues (Connell 1990; Connell and Wellborn 1991; Skinner and Belmont 1993), who distinguish two ends of a continuum: engagement and disaffected patterns of action. Engaged students show behavioral involvement in learning and positive emotional tone; they persevere in the face of challenge (Connell 1990; Connell and Wellborn 1991). In contrast, disengaged or disaffected students are passive, do not try hard, are bored, give up easily, and display negative emotions, such as anger, blame, and denial (Skinner and Belmont 1993).

In a review of the literature on student engagement, Fredricks, Blumenfeld, and Paris (2004) propose that student engagement has multiple dimensions: behavioral, emotional, and cognitive.

- Behavioral engagement draws on the idea of participation and includes involvement in academic, social, or extracurricular activities; it is considered crucial for achieving positive academic outcomes and preventing dropping out (Connell and Wellborn 1990; Finn 1989).

- Emotional engagement focuses on the extent of positive (and negative) reactions to teachers, classmates, academics, and school. Positive emotional engagement is presumed to create student ties to the institution and influence students' willingness to work (Connell and Wellborn 1990; Finn 1989).

- Cognitive engagement is defined as the student's level of investment in learning; it includes being thoughtful and purposeful in the approach to school tasks and being willing to exert the effort necessary to comprehend complex ideas or master difficult skills (Fredricks, Blumenfeld, and Paris 2004).

Why interest in engagement has increased

Several factors may explain the increased interest in understanding and collecting data on engagement. Among these are the inclusion of engagement as a goal of school improvement, growing awareness of the connection between disengagement and dropping out, and use of engagement as a program or intervention outcome.

Engagement as a goal of school improvement. Student engagement measures have been shown to correlate positively with achievement and negatively with the likelihood of dropping out of school (Fredricks, Blumenfeld, and Paris 2004). Engaged students are more likely to earn better grades and perform well on standardized tests (Fredricks, Blumenfeld, and Paris 2004; Marks 2000).

Engagement has been shown to decline as students progress through the upper elementary grades and middle school, reaching its lowest levels in high school (Marks 2000; National Research Council and Institute of Medicine 2004). This decline can be even more dramatic as students move through feeder patterns of low-performing, high-poverty schools (Yazzie-Mintz 2007). Some studies estimate that by high school as many as 40–60 percent of youth are disengaged (Marks 2000). Not surprisingly, increasing student engagement has been an explicit goal of many school and district improvement efforts, especially at the secondary level (National Research Council and Institute of Medicine 2004). Measurement is required if progress is to be tracked over time.

Connection between disengagement and dropping out. Measuring engagement helps identify at-risk students. For many students, dropping out

of high school is the last step in a long process of disengagement (Finn 1989). Its consequences for middle and high school students from disadvantaged backgrounds are especially severe, because these students are less likely to graduate and will face more limited employment prospects, increasing their risk of poverty, poor health, and involvement in the criminal justice system (National Research Council and Institute of Medicine 2004). For this reason, many educators, school psychologists, and community organizations are interested in obtaining better data on engagement and disengagement for needs assessment, diagnosis, and prevention.

Engagement as a program or intervention outcome. As part of the increased focus on school accountability over the past 15 years, more attention has been paid to studying and reporting the effectiveness of interventions designed to improve student outcomes. Currently, many school reform models, programs, and student interventions focus on enhancing engagement to improve achievement and school completion rates. Examples of interventions that have identified and measured engagement as an important student outcome include:

- The Institute for Research and Reform in Education (IRRE) has worked in nine districts nationwide to implement First Things First, a school reform model in which schools commit to improving engagement and strengthening relationships between students and adults (http://www.irre.org). IRRE assists schools in collecting meaningful data on student engagement.

- Check and Connect is aimed at students identified as at risk of dropping out (http://www.ici.umn.edu/checkandconnect). The program is designed to improve engagement by maximizing personal contact and opportunities to build trusting relationships with a mentor or monitor. Behavioral engagement (as reflected in attendance, grades, and suspensions) is checked regularly and used to help mentors strengthen students' connection with school.

- The National Center for School Engagement (NCSE) partners with school districts, law enforcement agencies, courts, and state and federal agencies to support youths and their families in improving engagement (http://www.schoolengagement. org). NCSE supports truancy reduction programs and helps schools track data on attendance and school engagement.

To increase engagement and find solutions for low academic achievement and high dropout rates, education professionals need to understand how engagement has been defined and to assess the options for measuring it

What this study examines

In seeking to increase engagement and find solutions for low academic achievement and high dropout rates, education professionals need to understand how engagement has been defined and to assess the options for measuring it. This report summarizes the characteristics of instruments used to measure student engagement in upper elementary through high school (see appendix A for instrument abstracts).

Using a methodology described briefly in box 1 and at length in appendix B, this study addresses two primary research questions:

1. What instruments are available to measure student engagement in upper elementary through high school?

2. What are the characteristics of each identified measure?

The report describes 21 instruments available for use at the upper elementary through secondary level (box 2 defines the three types of instruments). It focuses on this age range because of the documented decline in motivation and engagement across middle and high school (National Research Council and Institute of Medicine 2004).

BOX 1

Methodology

The instruments included in this report were identified through rigorous processes of searching and screening the literature and other sources for instrument names and summarizing information on the identified instruments (see appendix A for instrument abstracts and appendix B for more detail on the methodology).

Searching and screening. Databases including Academic Search Premier, PsycINFO, and ERIC were searched for student engagement instruments using systematic keyword searches (see table B1 in appendix B). The goal was to find articles that use the word *engagement* in their description of what was measured. Although there is some overlap in the meaning of *engagement* and other closely related terms such as *school belonging, bonding,* and *student motivation,* the search was limited to the term *engagement,* because it often has a particular meaning to practitioners as an important school goal or intervention outcome. It should be noted that several reviews of the engagement literature (Jimerson, Campos, and Grief 2003; Fredricks et al. 2004) have pointed out the lack of clear and accepted definitions of and distinctions between engagement and other related terms.

The search, restricted to studies published between 1979 (to predate the earliest emergence of engagement studies in the early 1980s) and May 2009, resulted in 1,314 citations. All were reviewed to exclude off-topic citations and identify any named instruments. Citations coded as on topic yielded 144 named instruments; 12 more were identified through supplementary processes, for a total of 156. Seven criteria were used in excluding instruments, resulting in 137 excluded instruments (see figure B1 in appendix B):

- Forty-six were intended for student populations outside the study age range.
- Five were used only with special education populations.
- Twelve were developed and used before 1979.
- Thirty-one measured a construct other than engagement (see table B4).
- Eleven were large-scale surveys that included only a few items on student engagement (see table B5).
- Twenty had limited or confusing information that made completing an accurate description difficult (see table B6).
- Twelve were excluded for other reasons.

Following these exclusions, 19 of the original 156 named instrument or instrument packages were determined to be appropriate for inclusion. Two contained separate measures of engagement—one student self-report measure and one teacher report measure. The two separate measures are described in one instrument abstract in appendix A because they have the same instrument name. Thus, there are 19 instrument abstracts, but 21 instruments are described in the findings.

Finding and summarizing information. In addition to citations for each instrument located through the initial search, further searches were conducted on each instrument name, abbreviation, and author to uncover any additional materials. Information was then systematically summarized using an instrument-documentation protocol (see table B7 in appendix B), and a draft abstract was prepared for each instrument detailing availability, population, method type, background, administration, what is measured, scoring/reporting, reliability, validity, and use. The instrument abstracts underwent three levels of review to ensure accuracy. The completed abstracts were sent to the instrument developers/authors to review for accuracy. Developers provided feedback on 18 of the 19 abstracts, offering minor changes to the descriptions or updated information and additional references or otherwise indicating that the abstract information was accurate.

BOX 2

Definitions of key terms

Three types of measurement methods are discussed in this report:

Student self-reports are measures in which students respond to items using specified response formats (such as "strongly agree" to "strongly disagree" or "very true of me" to "not true of me"). Scores can be summed or averaged across items to form subscale or total scores to describe the student.

Teacher reports are scores assigned to students based on teacher responses to a set of items using a specified response format (for example, "very true of student" to "not true of student").

Observational measures involve direct observation of behavior of individuals, targeted students, or classrooms. This study includes only systematic observational measures that use predetermined coding systems to record observations. Observational methods require trained observers to collect the data accurately and as intended by the instrument developer.

A *construct* is a variable that cannot be observed directly but is assumed to exist on the basis of other evidence. (The term is not normally applied to directly observable and measurable behaviors, such as attendance or suspension rates.) For example, the variable "emotional engagement" cannot be directly seen, but it is hypothesized to exist and to influence other behaviors. When an instrument is used to measure a construct, evidence must be obtained to show that the instrument actually measures the abstract or hypothetical construct it is intended to measure. Construct validity refers to the degree to which an instrument actually measures a construct.

A *scale* is a set of items or questions intended to measure the same construct. A scale score is created by summing or averaging the scores on the individual items. Some instruments, including many of the student self-report instruments, measure multiple constructs and thus have multiple scales (in which case they may be called subscales). For example, the Research Assessment Package for Schools contains a student self-report engagement scale, which has two subscales, Ongoing Engagement in School and Reaction to Challenge. Items on each subscale can be summed to create subscale scores.

WHAT INSTRUMENTS ARE AVAILABLE FOR MEASURING STUDENT ENGAGEMENT IN UPPER ELEMENTARY THROUGH HIGH SCHOOL?

The 21 measures of student engagement (14 student self-report instruments, 3 teacher report instruments, and 4 observation instruments) are listed in table 1. Three measures (Classroom AIMS, the Code for Instructional Structure and Student Academic Response [MS-CISSAR], and Engagement versus Disaffection with Learning [EvsD]) were developed for use with elementary school populations but have also been used with middle and high schools students. Two instruments (the Student Engagement Measure [SEM]-MacArthur and the Reading Engagement Index [REI]) were developed for use with upper elementary students and teachers; their use at the middle and high school levels is unknown. A version of the Motivated Strategies for Learning Questionnaire (MSLQ), developed for use with college samples, was adapted and used with middle school students. The High School Survey of Student Engagement (HSSSE) was modeled after the National Survey of Student Engagement (NSSE), a measure of engagement of college-age students.

All but one measure (the Attitudes Towards Mathematics Survey [ATM]) has been used with at least one ethnically or economically diverse sample of students (see appendix A for information on populations). Other than the work conducted by the developer, information could not be found on the use of five of the measures (4-H Study for Positive Youth Development School Engagement Scale, Consortium on Chicago School Research/Academic Engagement Scale [CCSR/AES], ATM, REI, and Student School Engagement Survey [SSES]).

Student self-report questionnaires

Student self-report measures can bring the critical voices and perspectives of students into school

TABLE 1
Developer and availability of instruments

Instrument	Developer	Availability/website
Student self-reports		
4-H Study for Positive Youth Development: School Engagement Scale (4-H)	Richard Lerner, Institute for Applied Research in Youth Development, Tufts University	Available by contacting developer, at richard.lerner@tufts.edu; http://ase.tufts.edu/iaryd
Attitudes Towards Mathematics Survey (ATM)	Raymond Miller, University of Oklahoma	Available in Miller et al. (1996)
Consortium on Chicago School Research/Academic Engagement Scale (CCSR/AES)	Consortium on Chicago School Research (CCSR)	http://ccsr.uchicago.edu/surveymeasures2007
Engagement versus Disaffection with Learning (EvsD), student report	Ellen Skinner, Portland State University	www.pdx.edu/psy/ellen-skinner-1
High School Survey of Student Engagement (HSSSE)	Center for Evaluation and Education Policy, Indiana University	www.indiana.edu/~ceep/hssse/
Identification with School Questionnaire (ISQ)	Kristin (Voelkl) Finn, Canisius College	Available in Voelkl (1996)
Motivated Strategies for Learning Questionnaire (MSLQ)	Paul Pintrich and Elisabeth DeGroot, National Center for Research to Improve Postsecondary Teaching and Learning, University of Michigan	Middle school version available in Pintrich and DeGroot (1990)
Motivation and Engagement Scale (MES)	Andrew Martin, Lifelong Achievement Group	www.lifelongachievement.com
Research Assessment Package for Schools (RAPS), student report	Institute for Research and Reform in Education (IRRE)	Available in RAPS manual (www.irre.org/publications/)
School Engagement Measure (SEM)-MacArthur	Phyllis Blumenfeld and Jennifer Fredricks, MacArthur Network for Successful Pathways through Middle Childhood	Available in Fredricks et al. (2005) or by contacting co-developer, at jfred@conncoll.edu
School Engagement Scale/Questionnaire (SEQ)	Sanford Dornbusch, Stanford University, and Laurence Steinberg, Temple University	Available by contacting co-developer, at lds@temple.edu
School Success Profile (SSP)	Gary Bowen and Jack Rickman, Jordan Institute for Families, University of North Carolina at Chapel Hill	www.schoolsuccessprofile.org
Student Engagement Instrument (SEI)	James Appleton, Gwinnett County Schools, Georgia, and Sandy Christenson, University of Minnesota	Available in Appleton et al. (2006) or by contacting developer, at Jim_Appleton@Gwinnett.k12.ga.us
Student School Engagement Survey (SSES)	National Center for School Engagement (NCSE)	www.schoolengagement.org
Teacher reports		
Engagement versus Disaffection with Learning (EvsD), teacher report	Ellen Skinner, Portland State University	www.pdx.edu/psy/ellen-skinner-1
Reading Engagement Index (REI)	Allan Wigfield and John Guthrie, University of Maryland	Available in Wigfield et al. (2008) or by contacting developers, at aw44@umail.umd.edu or jg76@umail.umd.edu
Research Assessment Package for Schools (RAPS), teacher report	Institute for Research and Reform in Education (IRRE)	Available in RAPS manual (www.irre.org/publications/)
Observational measures		
Behavioral Observation of Students in Schools (BOSS)	Edward Shapiro, Lehigh University	Manual can be ordered through Guilford Press (Shapiro 2004)

(CONTINUED)

TABLE 1 (CONTINUED)
Developer and availability of instruments

Instrument	Developer	Availability/website
Classroom AIMS	Alysia Roehrig, Florida State University	Available by contacting developer, at aroehrig@fsu.edu
Code for Instructional Structure and Student Academic Response (MS-CISSAR)	Charles Greenwood, Juniper Gardens Children's Project, University of Kansas	www.jgcp.ku.edu/~jgcp/products/EBASS/ebass_materials.htm
Instructional Practices Inventory (IPI)	Jerry Valentine, Middle Level Leadership Center, University of Missouri	www.mllc.org

Note: The Academic Engagement Scale has been translated into Polish and Spanish. The Motivated Strategies for Learning Questionnaire has been translated into nine languages. The School Success Profile is available in Spanish; parts of it have been translated into Hebrew, Lithuanian, Portuguese, and Romanian. The SEM-MacArthur has been translated into Spanish.

Source: Authors' analysis of instrument documentation.

reform and improvement efforts. The 14 self-report measures range from a 4-item scale (the CCSR/AES) to a 121-item questionnaire (the HSSSE). In some cases, the engagement items are a subset of a longer instrument that measures other constructs as well; some instrument names (for example, the ATM and the School Success Profile [SSP]) reflect their broader focus. It is up to users to determine whether a subset of engagement items from a larger instrument can be used for their purposes. However, care should be taken in using a subscale or set of items from a larger instrument or adapting scales by eliminating or changing items, because such changes may affect the instrument's reliability and validity. Instrument developers or other experts should be consulted to identify implications of using subscales from a larger instrument or making changes to an item set.

Copies of 11 of the 14 instruments are available at no cost in a published source, accessible online, or available by contacting the developer. The other three instruments (the SSP, the HSSSE, and the Motivation and Engagement Scale [MES]) must be purchased. The cost covers questionnaire materials, survey administration, data preparation, preparation of individual and school reports, and other technical assistance.

Most student self-report measures were administered in classrooms. Because the engagement scales were sometimes part of a larger item set, the time to administer the subscales was generally unknown. Several studies mentioned having an individual other than the teacher administer the questionnaire, to encourage students to be more honest in their reporting. Others mentioned the importance of reading all the items aloud to students, at least at the upper elementary to middle school level, to eliminate the possibility that students misread questions.

One instrument, the SSP, trains registered users online. Some developers provide administration guidelines. Developers acknowledge the importance of clear instructions so that survey administration can be standardized. For example, the developers of the Research Assessment Package for Schools (RAPS) suggest that training for data collectors should include information on standard instructions, pacing, maintaining focus, and answering questions.

Teacher reports on students

Three instruments (ranging from 3 to 20 items) involve teacher reports on individual student engagement. All three teacher report instruments are available at no cost.

Two developers of student self-report measures (the EvsD and RAPS) also offer an instrument for teacher reports on student engagement. In the EvsD teacher report instrument, teachers complete

20 items on behavioral and emotional engagement for each student in their class. In the RAPS teacher report measure, teachers complete three items on each student. Neither teacher report is subject specific; both can be used in any subject area. In the third measure, the Reading Engagement Index (REI), teachers rate students on aspects of engaged reading, with ratings summed across the eight items for a total score. Teachers in one study completed the REI in a 20-minute session, suggesting that the rating time per 25 students in a classroom is less than a minute per student.

For meaningful results, teachers should have experience with the students before completing the items. Teacher ratings should be completed at the same time and in a consistent manner across all teachers in a study.

Observational measures

Four measures use observational methods to collect data on engagement. Two (the Behavioral Observation of Students in Schools [BOSS] and the MS-CISSAR) observe individual students; two others (Classrooms AIMS and the Instructional Practices Inventory [IPI]) involve classroom observations. For all four, the developers stress the importance of well trained observers (that is, observers who have demonstrated that their observation results are consistent with the results from a prerecorded criterion observation or with the observations of other trained observers).

Student-level observations. BOSS and the MS-CISSAR assess students' on- and off-task behavior in an instructional setting. Both involve systematic direct observations of students in classrooms using a standardized observation protocol to collect data on a specific, predetermined set of behaviors. These measures use a form of momentary time sampling, in which an observer records whether a student exhibits a predetermined category of behavior during a defined interval.

Four measures use observational methods to collect data on engagement—two observe individual students, and two involve classroom observations

Data are reported as the percentage of occurrences of the observed behaviors out of the total number of observations.

Determining the number of observations needed to get an accurate picture of a student is critical. The developer of BOSS recommends collecting data at multiple times and acknowledges that observers may need to collect data across academic settings (group work, seat work, and so forth). The developer suggests three observations of 20–30 minutes each over 2–3 days. According to the developer, about 10–15 hours of training is required to become proficient at administering the measure.

For the MS-CISSAR, observation data are recorded in 20-second intervals, with the user determining the length or total time a student is observed. Training is available through videotapes and other self-practice manuals.

The observational codes of BOSS and MS-CISSAR instruments are publicly available in journal articles and books. The software systems and observer training must be purchased.

Classroom observations. Two observational measures, the Classroom AIMS and the IPI, focus on the classroom rather than the student. Classroom AIMS covers four areas: three categories of teaching practice (atmosphere, instruction/content, and management) and one category of student outcomes called engagement (four items). The four engagement items (constituting a subscale) are part of a larger set of 75 items that an observer completes on a teacher's classrooms to assess the teacher's use of effective teaching practices and success in maintaining high levels of observed student engagement. Studies using this measure have reported classroom observations of one to four hours occurring two to five times a year. The 75 items are available from the developer, but no training is available.

The IPI aggregates classroom observations (100–120 three-minute classroom observations per

school) to the school level. The developer recommends that schools collect data several times a year. The results are provided as percentages of classrooms falling into each of six categories of engaged learning. The schoolwide results are examined without reference to individual teachers, as the results are intended for use in faculty discussions about schoolwide improvement of teaching and learning. The IPI is publicly available, but the developer does not recommend its use without training. Training is available in a one-day workshop provided by the developers. Because the IPI is intended as a formative tool for faculty reflection on student-engaged learning in the school, the developers suggest that school administrators not be observers.

WHAT ARE THE CHARACTERISTICS OF EACH IDENTIFIED MEASURE?

The information in the instrument abstracts in appendix A is summarized below to provide a broad overview of the characteristics of the identified measures. The information is organized into three sections that represent the kinds of questions someone searching for measures might have:

- *Definition of engagement.* The "what is measured" row of the instrument abstracts describes how the instrument measures engagement (subscale names, sample items, number of items, and so forth). Substantial variation exists in how engagement is defined. One aspect of what is measured has to do with the dimensions of engagement assessed (behavioral, emotional, and cognitive). A second has to do with the object of engagement (engagement in school or engagement of all students or individual students in a classroom).

- *Purposes and uses.* The "background" and "use" rows address why the instrument was developed and how it has been used. The purposes and uses are important because they help potential users understand how particular measures may align with their intended uses.

- *Technical information on the psychometric properties of the measure.* Psychometric[1] properties refer to the description of information gathered during the construction and validation of measures that shows the degree to which the instrument is operating as intended (that is, how much evidence is available to support the appropriateness of inferences made as a result of employing the measure). Two important types of psychometric information for potential users to consider are reliability and validity, detailed for each instrument in appendix A. The psychometric information provided is that found by the research team but may not be all the information available on a measure. An exhaustive search and review of the technical quality of individual instruments was not conducted, and judgments were not made about the quality of the studies cited or the adequacy of the technical information reported. Once a particular instrument use is identified, users should explore reliability and validity with developers or other experts in more depth relative to the intended use.

The information on instruments is organized by the three kinds of questions someone searching for measures might have: definition of engagement, purposes and uses, and psychometric properties

Definition of engagement

Developers use a broad range of terms to describe their instruments *(student engagement, school engagement, academic engagement, engaged time, student engaged learning, academic responding, engagement in class, engagement in school work),* illustrating the lack of commonly accepted terminology in this area. The dimensions and focuses of engagement also vary across instruments (table 2).

Dimensions of engagement assessed. Several summaries of research on engagement (Fredricks, Blumenfeld, and Paris 2004; Jimerson, Campos, and Greif 2003; National Research Council and

Different instruments measure different types of engagement—behavioral, emotional, or cognitive

Institute of Medicine 2004) describe it as having multiple dimensions. For example, *Engaging Schools: Fostering High School Students' Motivation to Learn* (National Research Council and Institute of Medicine 2004) describes engagement in schoolwork as involving behaviors (persistence, effort, attention, taking challenging classes), emotions (interest, pride in success), and mental or cognitive aspects (solving problems, using metacognitive strategies). It also distinguishes between academic engagement and social engagement (participation in extracurricular activities, having friends at school).

Different instruments measure different types of engagement (behavioral, emotional, or cognitive; see table 2). When available, the developer's language is used to check the dimensions of engagement assessed. Where the developer did not use the terms *behavioral, emotional,* or *cognitive,* the instrument content was reviewed against typical descriptions of each dimension in the literature.

Student self-report measures. Of the 14 student self-report instruments, 5 include subscales that address all three dimensions of engagement; 5 address two dimensions; and 4 address one dimension (see table 2).

- *Behavioral engagement.* Of the 14 student self-report measures, 11 include a focus on behavioral engagement; 4 have subscales entitled *behavioral engagement* (see table C1 in appendix C). Across measures, individual items ask students to report on their attention, attendance, time on homework, preparation for class, participation in class, concentration, participation in school-based activities, effort, persistence, adherence to classroom rules, and risk behaviors (such as skipping school).

- *Emotional engagement.* Of the 14 student self-report measures, 10 include items having to do with emotional engagement; 5 include subscales labeled *emotional engagement.* Items address emotional reactions to school or aspects of school such as being happy or anxious, expressing interest and enjoyment, reporting fun and excitement, feeling safe, having supportive or positive relationships with teachers and peers, having family support for learning, expressing feelings of belonging, and valuing school.

- *Cognitive engagement.* Of the 14 student self-report measures, 8 include items focusing on cognitive engagement; 3 have subscales labeled *cognitive engagement.* Two instruments (the ATM and the MSLQ) include items assessing self-regulation, defined as a set of metacognitive, motivational, and behavioral techniques a learner can use to manage and control learning processes; and aspects of cognitive strategy use, which include questions about the use of shallow or deep strategies to learn, remember, and understand material.[2] Some instruments (the Student Engagement Instrument [SEI] and the Student School Engagement Survey [SSES]) ask students about the importance of schooling, learning goals, or future aspirations as an aspect of cognitive engagement.

Items used to measure behavioral, emotional, and cognitive engagement are sometimes used inconsistently across instruments. For example, some instruments consider the extent of participation in class as an aspect of behavioral engagement, whereas others consider it an aspect of cognitive engagement. Some instruments use student effort to describe the degree of psychological investment in learning (cognitive engagement), whereas others use it to reflect compliance with the work required in school (behavioral engagement). Students' valuing of school is used as part of both emotional and cognitive engagement measures. The Identification with School Questionnaire (ISQ), for example, assumes that valuing is emotional and reflects how much students value school as an important institution in society and as useful to achieving their future goals (Voelkl 1997). Other measures assume that valuing reflects cognitive engagement

TABLE 2
Dimensions of engagement assessed by instruments

Instrument	Behavioral	Emotional	Cognitive
Student self-reports			
Multidimensional			
4-H Study for Positive Youth Development: School Engagement Scale (4-H)	✓	✓	✓
High School Survey of Student Engagement (HSSSE)	✓	✓	✓
Motivation and Engagement Scale (MES)	✓	✓	✓
School Engagement Measure (SEM)-MacArthur	✓	✓	✓
Student School Engagement Survey (SSES)	✓	✓	✓
Bidimensional			
Attitudes Towards Mathematics Survey (ATM)	✓		✓
Education versus Disaffection with Learning (EvsD), student report	✓	✓	
Research Assessment Package for Schools (RAPS), student report	✓	✓	
School Success Profile (SSP)	✓	✓	
Student Engagement Instrument (SEI)		✓	✓
Unidimensional			
Consortium on Chicago School Research/Academic Engagement Scale (CCSR/AES)	✓		
Identification with School Questionnaire (ISQ)		✓	
Motivated Strategies for Learning Questionnaire (MSLQ)			✓
School Engagement Scale/Questionnaire (SEQ)	✓		
Teacher reports			
Engagement versus Disaffection with Learning (EvsD), teacher report	✓	✓	
Research Assessment Package for Schools (RAPS), teacher report	✓	✓	
Reading Engagement Index (REI)	✓	✓	✓
Observational measures			
Behavioral Observation of Students in Schools (BOSS)	✓		
Classroom AIMS	✓	✓	
Code for Instructional Structure and Student Academic Response (MS-CISSAR)	✓		
Instructional Practices Inventory (IPI)			✓

Source: Authors' analysis of instrument documentation.

(students' beliefs and self-appraisals of their learning goals). (Table C1 in appendix C provides additional information on the student self-report measures, including the subscale names used and sample item wording. Table C2 shows the subscales, categorized by the three dimensions of engagement, used across student self-reports.)

Teacher report measures. The three teacher report measures involve teacher ratings of individual student engagement. The EvsD (a 20-item instrument) comprises four subscale scores reflecting both positive and negative aspects of behavioral and emotional engagement. The RAPS teacher report includes three items that assess both behavioral and emotional engagement, which are summed to yield a general measure of student engagement. The REI produces one total score from eight items intended to cover behavioral, emotional (motivational), and cognitive aspects of reading engagement.

Observational measures. BOSS and the MS-CISSAR measure a targeted individual student's

The choice of an instrument depends on the intended use; no single instrument is best for all purposes

on- and off-task behavior or time engaged in classroom settings. As such, they focus on categories of observed behavioral engagement. Classroom AIMS includes an engagement subscale with four items assessing observable aspects of classroom behavioral engagement (whether most students stay on task) and emotional engagement (whether students are excited about content). The IPI measures student-engaged learning (that is, the extent of higher-order/deep learning in classrooms), which is similar to cognitive engagement.

Measures of engagement in school or class. The instruments studied assess general engagement in school or engagement in a particular class (for example, in content or subject areas; table 3). Nine of the student self-report measures include items worded to reflect general engagement in school. Five (the CSSR/AES, ATM, EvsD, MSLQ, and the School Engagement Scale/Questionnaire [SEQ]) are worded for use at the class level. The CCSR/AES is administered in language arts classes. The ATM, MSLQ, and SEQ have been used in various high school subject areas. The EvsD assesses engagement in the classroom in general.

Two teacher report instruments (the EvsD and RAPS) are also class specific. Teachers rate students based on their knowledge of students in their own classroom context. The third teacher report instrument, the REI, assesses students as engaged readers in a particular class context.

Purpose and uses

The instruments are used for a variety of purposes. The classification in table 4 is not intended to suggest that each instrument should be used only for the identified purposes but to show potential users how the instruments have been used in previous studies.

The choice of an instrument depends on the intended use; no single instrument is best for all purposes. The need to compare results with normative data available from the developer, for example, limits the choices to instruments such as the HSSSE, SSP, MES, RAPS, and IPI, which have such comparison data available to help in interpreting the results. District or community organizations looking for a broad-based survey to compare aspects of adolescents' well-being for use in needs assessment discussions can choose between just 2 of the 21 instruments (4-H, SSP). A school psychologist who wants to observe a student over time and track observed engagement to see whether a particular intervention seems to be helping can also choose between just two instruments in the set (BOSS, MS-CISSAR). Schools interested in tracking increases in student engagement over time as a school improvement goal must determine whether their interest is in engagement in school; engagement at the class level, in particular subjects; or particular skills, such as reading, because different measures assess engagement in different contexts. They must also consider the potential usefulness of including multiple measures of engagement, comparing and contrasting data from students, teachers, and observational methods to better understand the current state of student engagement.

Research on student motivation and cognition. Several measures were developed by research psychologists studying motivation, cognition, and engagement. The EvsD student and teacher report instruments were developed in the early 1990s, through research testing a theory of motivation linking aspects of the environment (such as the degree to which the teacher makes students feel as if they belong) with patterns of student behavior (such as extent of student engagement) and achievement outcomes (Connell 1990). In 1998, Connell and others at the IRRE revised the original instruments to create a shorter set of instruments (RAPS) for evaluating school reform efforts based on the same theoretical framework. Two other measures (the ATM and the MSLQ) were developed as part of research exploring the relationships among students' self-regulation in learning, cognitive strategy use, and achievement

TABLE 3
Instruments with sample items by school or class focus

Instrument	Sample item	Setting	
		In school	In class
Student self-reports			
4-H Study for Positive Youth Development: School Engagement Scale (4-H)	I want to learn as much as I can in school.	✓	
Academic Engagement Scale (CCSR/AES) (administered in language arts classes in Chicago)	I work hard to do my best in this class.		✓
Attitudes Towards Mathematics Survey (ATM)	If I have trouble understanding a problem, I go over it again until I understand it.		✓
Engagement versus Disaffection with Learning (EvsD), student report[a]	When I'm in class, I listen very carefully.		✓
High School Survey of Student Engagement (HSSSE)	How do you feel about the following statements related to your high school?	✓	
Identification with School Questionnaire (ISQ)	School is one of my favorite places to be.	✓	
Motivated Strategies for Learning Questionnaire (MSLQ)	I outline the chapters in my book to help me study.		✓
Motivation and Engagement Scale (MES)	I've given up being interested in school.	✓	
Research Assessment Package for Schools (RAPS), student report[a]	I work hard on my schoolwork.	✓	
School Engagement Measure (SEM)-MacArthur	I am interested in the work at school.	✓	
School Engagement Scale/Questionnaire (SEQ)	How often does your mind wander in each of these classes?		✓
School Success Profile (SSP)	I find school fun and exciting.	✓	
Student Engagement Instrument (SEI)	Learning is fun because I get better at something.	✓	
Student School Engagement Survey (SSES)	I feel excited by the work in school.	✓	
Teacher reports			
Engagement versus Disaffection with Learning (EvsD), teacher report[a]	In my class, this student does more than required.		✓
Reading Engagement Index (REI)	This student works hard in reading.		✓
Research Assessment Package for Schools (RAPS), teacher report[a]	In my class, this student seems tuned in.		✓
Observational measures			
Behavioral Observation of Students in Schools (BOSS)	Observations are coded using five categories (active engagement, passive engagement, off-task motor, off-task verbal, and off-task passive).		✓ (focus on individual student)
Classroom AIMS	Observers respond to four items about engagement levels in the class (for example, at least 80 percent of students are consistently on task and highly engaged in class activities).		✓ (classroom focus)
Code for Instructional Structure and Student Academic Response-Mainstream Version (MS-CISSAR)	Observations of student behavior are coded using three categories (positive engagement behaviors, neutral engagement behaviors, and inappropriate behaviors).		✓ (focus on individual student)
Instructional Practices Inventory (IPI)	Observations of classrooms are coded using a six-level rubric of extent of engaged student learning.		✓ (classroom focus)

a. Includes separate student self-report and teacher report instruments.

Source: Authors' analysis of instrument documentation.

TABLE 4
Purposes and uses of instruments

Instrument	Research on motivation and cognition	Research on dropping out	Evaluation of interventions	Monitoring at the teacher, school, or district level	Diagnosis and monitoring at the student level	Needs assessment
Student self-reports						
4-H Study for Positive Youth Development: School Engagement (4-H)			✓ (4-H participation)			✓
Academic Engagement Scale (CCSR/AES)				✓		
Attitudes Towards Mathematics Survey (ATM)	✓					
Engagement versus Disaffection with Learning (EvsD), student report[a]	✓					
High School Survey of Student Engagement (HSSSE)				✓		
Identification with School Questionnaire (ISQ)		✓	✓ (class size; magnet schools)			
Motivated Strategies for Learning Questionnaire (MSLQ)	✓		✓ (instructional strategies)			
Motivation and Engagement Scale (MES)	✓		✓ (youth enrichment program)	✓	✓	
Research Assessment Package for Schools (RAPS), student report[a]	✓		✓ (school reform)	✓	✓	
School Engagement Measure (SEM)-MacArthur	✓					
School Engagement Scale/ Questionnaire (SEQ)	✓		✓ (instructional strategies)			
School Success Profile (SSP)			✓ (social supports)	✓		✓
Student Engagement Instrument (SEI)		✓	✓ (dropout prevention)	✓	✓	
Student School Engagement Survey (SSES)			✓ (truancy reduction)			
Teacher reports						
Engagement versus Disaffection with Learning (EvsD), teacher report[a]	✓					

(CONTINUED)

TABLE 4 (CONTINUED)
Purposes and uses of instruments

Instrument	Research on motivation and cognition	Research on dropping out	Evaluation of interventions	Monitoring at the teacher, school, or district level	Diagnosis and monitoring at the student level	Needs assessment
Reading Engagement Index (REI)	✓ (reading motivation)		✓ (professional development)			
Research Assessment Package for Schools (RAPS), teacher report[a]	✓		✓ (school reform)			
Observational measures						
Behavioral Observation of Students in Schools (BOSS)			✓ (remediation)		✓	
Classroom AIMS			✓ (teacher mentoring)	✓		
Code for Instructional Structure and Student Academic Response-Mainstream Version (MS-CISSAR)			✓ (instructional strategies)		✓	
Instructional Practices Inventory (IPI)			✓ (school reform)	✓		

a. Includes separate student self-report and teacher report instruments.

Source: Authors' analysis of instrument documentation.

outcomes. Research in this area examines the use of cognitive, metacognitive, and self-regulatory strategies that foster active engagement in learning (Corno and Mandinach 1983; Meece, Blumenfeld, and Hoyle 1988).

Research on dropping out. A long line of research explores disengagement as a precursor to dropping out (Appleton, Christenson, and Furlong 2008; Finn 1989). Two measures were developed by researchers investigating this issue—the ISQ and the SEI. The ISQ was developed to assess how much students identify with or disengage from school, based on the hypothesis that identifying with one's school is crucial in preventing dropouts (Finn 1989). The SEI was developed to go beyond observable indicators of academic and behavioral engagement (time on task, attendance, homework completion) and measure the cognitive and psychological aspects of engagement as reported by students themselves.

Evaluation of interventions. Many measures have been used to study the effects of interventions or school reform efforts on increasing engagement or reducing aspects of disengagement (dropout rates, truancy). RAPS was developed for use in schools implementing First Things First, a school reform model aimed at promoting student engagement and learning. The items used on the SSES were compiled from other pre-existing measures of engagement by the NCSE for evaluating interventions aimed at reducing truancy.

Monitoring of engagement at the teacher, school, or district level. Some measures have been used to inform improvement efforts at the teacher, school, or district level based on the assumption that student engagement is important to monitor. Two student self-report measures (the CCSR/AES and the HSSSE) provide feedback to schools on their students' engagement, which can be compared with the results for other schools or national

This report summarizes evidence on two broad categories of psychometric information: reliability and validity—both of which are multifaceted

norms. The Chicago Consortium on School Research converts scores from the CCSR/AES to qualitative descriptors that reflect the level of risk. The scale results classify students into four categories (none, limited, moderate, or high engagement). Schools can then examine the percentage of students in each category across time or compare percentages with those of other schools. Schools that participate in the HSSSE receive customized reports that compare their students' responses with those of other schools. Classroom AIMS has been used to provide feedback to teachers on their use of instructional strategies and levels of student engagement. The IPI aggregates classroom observations to provide formative data to school faculty on the extent of student-engaged learning.

Diagnosis and monitoring of students at risk for disengagement. Other measures were developed to identify and assess students at risk for disengagement and academic failure to provide better services to these students. The MES student self-report measure creates individual profiles across 11 subscales reflecting a multidimensional model of motivation and engagement. Users of this measure are given a list of targeted interventions for students who match particular profiles of low motivation and engagement. Two observational systems, BOSS and the MS-CISSAR, respond to the need of school psychologists and others for standardized observational measures of student behavior to supplement achievement measures. These measures have been used to assess individual students in both typical and special needs populations, especially students at risk for academic failure.

Needs assessment. Two student self-report measures (the 4-H and the SSP) were developed as part of larger projects to collect survey data on the percentage of youths in a community with positive developmental assets. (Developmental assets are the positive experiences and qualities that can prevent high-risk behavior, enhance positive outcomes, and contribute to resiliency.) The items used in the 4-H study were initially part of the Profiles of Student Life: Attitudes and Behaviors Survey (PSL-AB), which measures 40 assets (positive experiences and qualities) considered important in positive youth development. The school engagement scale of the SSP is one of 22 core dimensions assessed as part of a larger instrument intended to promote academic performance and close the achievement gap.

Technical information available on the psychometric properties of measures

A key aspect to consider in selecting a measure of engagement is its psychometric properties. There are many ways to collect and report empirical evidence about how scores from an instrument behave and whether they behave as intended. This report summarizes evidence on two broad categories of psychometric information: reliability and validity (both of which are multifaceted). The report describes evidence found on three types of reliability and two types of validity (table 5). (For information on definitions and methods for examining reliability and validity, see AERA/APA/NCME 1999; Crocker and Algina 1986).

Reliability refers to the degree to which an instrument produces consistent results. For example, a measure should yield consistent results across administrations. A measuring technique is unreliable, for example, if a scale registers a person's weight at 140 one day and 110 the next.

Reliability is necessary but not sufficient: a measure can be highly reliable but not valid. The validity of an instrument reflects whether the results obtained from using the instrument actually measure what was intended and not something else. Validity is concerned with the appropriateness of inferences made as a result of employing a measure. Instruments are validated to provide evidence to support inferences about the construct of interest. According to Hopkins, Stanley, and Hopkins (1990), if a measure lacks validity, the information provided is useless; the validity of a

TABLE 5
Reliability and validity information reported

Instrument	Reliability			Validity	
	Internal consistency (Cronbach's alpha)	Test-retest correlation	Interrater agreement	Construct	Criterion-related
Student self-reports and teacher reports					
4-H Study for Positive Youth Development: School Engagement Scale (4-H)	.63–.90	—	—	—	✓
Consortium on Chicago School Research/ Academic Engagement Scale (CCSR/AES)	.65–.68	—	—	✓	✓
Attitudes Towards Mathematics Survey (ATM)	.63–.81	—	—	✓	✓
Engagement versus Disaffection with Learning (EvsD), student and teacher reports	.61–.85 student report, .81–.87 teacher report	.53–.68 student report, .65–.82 teacher report	—	✓	✓
High School Survey of Student Engagement (HSSSE)	—	—	—	—	—
Identification with School Questionnaire (ISQ)	.54–.84	—	—	✓	✓
Motivated Strategies for Learning Questionnaire (MSLQ)	.63–.88	—	—	✓	✓
Motivation and Engagement Scale (MES)	.70–.87	.61–.81	—	✓	✓
Reading Engagement Index (REI)	.89–.93	—	—	✓	✓
Research Assessment Package for Schools (RAPS), student and teacher reports	.68–.77 student report, .87 teacher report	—	—	✓	✓
School Engagement Measure (SEM)-MacArthur	.55–.86	—	—	✓	✓
School Engagement Scale/Questionnaire (SEQ)	.74–.86	—	—	✓	✓
School Success Profile (SSP)	.66–.82	—	—	✓	✓
Student Engagement Instrument (SEI)	.72–.92	—	—	✓	✓
Student School Engagement Survey (SSES)	.49–.92	—	—	✓	✓
Observational measures					
Behavioral Observation of Students in Schools (BOSS)	—	—	.90–1.00	✓	✓
Classroom AIMS	.62–.79	—	.58–.65	✓	—
Code for Instructional Structure and Student Academic Response—Mainstream Version (MS–CISSAR)	—	—	.80–.97	—	✓
Instructional Practices Inventory (IPI)	—	—	.80–.90	✓	✓

— is not available.

Note: Ranges within cells indicate results for different subscales, age groups, or results by different researchers. Checkmarks indicate that information on validity is available, not that measures are necessarily valid.

Source: Authors' analysis of instrument documentation.

The internal consistency of the student and teacher report engagement scales/ subscales as reported by the instrument developers or others ranged from .49 to .93, with most scales in the .70–.80 range

measure can be described in terms of the "accuracy of specified inferences made from its scores" (p. 76). Validity has to be examined in the context of a specific use of a measure. For example, cranial measurements can be obtained reliably and are valid measures for use in determining head size, but they are not a valid measure of intelligence (Leary 2004).

The instrument abstracts in appendix A briefly describe the information on reliability and validity identified from the references on each instrument. The research team did not conduct an exhaustive search and review of the technical quality of the instruments, so no judgments are made about the quality of the studies cited or the adequacy of the technical information reported. Potential users should explore the information available on reliability and validity in more depth before selecting a measure for a particular use.

Reliability. Three types of reliability are summarized: internal consistency, test-retest correlation, and interrater agreement.

Internal consistency. Internal consistency is the extent to which individuals who respond one way to one item respond the same way to other items intended to measure the same thing. This kind of reliability is important for measures that sum or average responses across a set of items to provide a single scale score.

Internal consistency can be examined using Cronbach's alpha coefficient, which results in values ranging from 0 to 1. The closer to 1, the more internally consistent a set of items is for that sample of respondents. A Cronbach's alpha of .70 or higher for a set of items is considered acceptable (Leary 2004).

The internal consistency of the student and teacher report engagement scales/subscales as reported by the instrument developers or others ranged from .49 to .93, with most scales falling in the range of .70–.80 (see table 5).[3] The lowest alpha (.49) was reported for the behavioral engagement subscale of the SSES. The low reliability of the behavioral engagement scale was present at only one of the three intervention sites, however, with alphas of .79 and .80 at the other two.

The alpha coefficient of the SEM-MacArthur cognitive engagement subscale was .55 during the first wave of data collection. The developers made several changes in the wording of the cognitive engagement items and excluded students in grade 3, who had difficulty answering the questions. These changes raised the alpha to .82 in the second wave of data collection.

As these examples suggest, the range of alphas can be broad. It is important to examine the information on reliability closely in light of the sample and intended use of the measure selected.

Test-retest correlation. Test-retest reliability is the degree to which two different administrations of the measure give the same results. Correlations obtained can range from 0 to 1. The closer to 1, the greater the confidence that the instrument can produce consistent results.

Few instruments reported information on repeated administrations to the same group. The EvsD reported cross-year correlations of .53–.68 for the student self-report measure and .65–.82 for the teacher report. The MES developers reported test-retest reliability for each of the instrument subscales of .61 to .81 across two administrations several weeks apart. Test-retest correlations need to be examined in light of the length of time between the two administrations. (A two-week test-retest correlation should be higher than a cross-year correlation.)

Interrater agreement. Interrater reliability is relevant for observational measures. It provides evidence of the consistency of ratings across two or more observers who use a prespecified coding

system. Training observers is critical for obtaining high interrater reliability. BOSS, MS-CISSAR, and IPI developers reported post-training interrater reliability at acceptable levels. This type of reliability can be reported as the percentage of times the observers agreed after observing the same behavior. Studies of the MS-CISSAR reported at least .80 agreement between observers after training.

Interrater reliability can also be reported in terms of the correlation between ratings by different observers. The developers of the IPI reported that interrater reliability was just .05–.20 among observers without training but at least .80 among a group of observers who attended the one-day training workshop.

Validity. Many types of data can be collected to provide evidence of validity. The information reported for each instrument is described in appendix A.

Construct validity. Construct validity refers to the appropriateness of inferences made when using a measure. Information on construct validity is reported on all but three instruments (the 4H, the HSSSE, and the MS-CISSAR). Potential users should closely examine evidence provided by developers on how accurately a particular measure assesses a particular construct.

Several types of correlational analyses (validity studies) were reported as evidence of construct validity. The CCSR/AES was found to correlate positively with student perceptions of teacher support. The RAPS engagement scale correlated as expected with students' perceptions of aspects of their school environment. The student engagement scales in the SSP were reported to correlate positively with student perceptions of teachers, parents, and peer support. As Leary (2004, p. 71) notes: "No general criteria can be specified for evaluating the size of correlations when assessing construct validity. The size of each correlation coefficient must be considered relative to the correlation we would expect to find if our measure were valid and measured what it was intended to measure."

Construct validity can also be informed by comparing patterns of correlations across methods of measuring engagement. The developers of five instruments (BOSS, EvsD, RAPS, REI, and SEM-MacArthur) provided information on the correlations between data on engagement collected using different methods (student self-reports, teacher reports, and observations). For the EvsD, correlations between student and teacher measures were somewhat stronger for behavioral engagement than those for emotional engagement. This finding may reflect the fact that teachers can more easily observe student behaviors than student emotions.

Nine instruments (the Classroom AIMS, EvsD, ISQ, MES, MSLQ, RAPS, REI, SEI, and SEM-MacArthur) reported results from either exploratory or confirmatory factor analyses to support the validity of their subscales. (A factor analysis is a statistical technique that can be used to identify the underlying factors that account for relationships among items on a measure.) For a particular sample of respondents, responses to items measuring the same thing should load together on the same factor. For example, the developers of the ISQ used confirmatory factor analyses with 16 items to confirm two subscales (belonging and value); the developers of the MES used confirmatory factor analyses on a set of 44 items, resulting in 11 subscales (self-belief, learning focus, valuing of school, persistence, planning, study management, disengagement, self-sabotage, anxiety, failure avoidance, and uncertain control).

Criterion-related validity. Criterion-related validity refers to how well scores from a measure relate to key behaviors or outcomes. This type of validity is particularly important for potential users to examine, because engagement is often considered a proxy

Several types of correlational analyses were reported as evidence of construct validity, while 13 instruments reported positive correlations with some measure of student achievement (criterion-related validity)

for student achievement (that is, if students are engaged in school, they are hypothesized to learn more over time and perform better on tests). Engagement scores would therefore be expected to correlate positively with grades or other measures of academic performance; potential users of engagement measures should examine whether a particular measure is reported to have such a relationship with relevant achievement measures. Ten of the student self-report measures of engagement (4-H, ATM, ISQ, MSLQ, MES, RAPS, SEM, SEQ, SEI, SSES), two of the teacher report instruments (RAPS, REI), and one observational measure (MS-CISSAR) reported positive correlations with some measure of student achievement. The developers of two instruments (RAPS and the SSES) reported positive correlations between their measures of student engagement and student attendance.

STUDY LIMITATIONS

Readers should keep in mind several caveats in reading this study:

- The 21 instruments described may not include all engagement measures; some instruments might not have been found in the search, and some might have been excluded for reasons outlined in appendix B. The research team searched for instruments that used the term engagement or that were described as measuring engagement. The search did not include measures developed to assess closely related concepts that have not been described by either the developers or subsequent researchers as engagement measures.

- The abstracts in appendix A do not purport to cover the entire body of evidence on the use of each instrument. They provide only a useful starting point for understanding what is available.

- This study does not assess the quality of the studies or citations in the reference section of the abstracts of each instrument in appendix A. It describes what the studies reported in terms of reliability, validity, and uses without examining the quality of the studies themselves. The inclusion of an instrument in this report should thus not be interpreted as a judgment about its quality or as advocacy of its use. It is left up to users to judge the technical quality of the instruments for their particular purposes.

NOTES

1. Psychometrics is the field of study concerned with the theory and technique of educational and psychological measurement, including the construction and validity of measurement instruments such as questionnaires, tests, and personality assessments.

2. Deep learning strategies help students understand material (using higher-order thinking, for example). Shallow strategies help students memorize or reproduce knowledge, with little attempt at deeper levels of analysis or understanding.

3. One instrument, the HSSSE, used an item-by-item reporting format for several years but now groups the 121 items in the questionnaire by the three dimensions of engagement. No information on the internal consistency of the item groupings is available from the developer.

APPENDIX A
INSTRUMENT ABSTRACTS

This appendix includes abstracts of the 21 instruments reviewed. (The student and teacher reports of the EvsD and RAPS are shown together, in tables A4 and A9, reducing the number of abstracts to 19.) Tables A1–A14 describe the 14 student self-report instruments (and the EvsD and RAPS teacher reports). Table A15 describes a third teacher report instrument, the REI. Tables A16–A19 describe the four observational instruments.

Student self-report instruments

TABLE A1
4-H Study for Positive Youth Development: School Engagement Scale (4-H)

Feature	Description
Developer/website	Developed by Dr. Richard Lerner and his colleagues at the Institute for Applied Research in Youth Development at Tufts University as part of the longitudinal 4-H Study of Positive Youth Development (http://ase.tufts.edu/iaryd).
Availability/ key source	A copy of the engagement scale items can be obtained by contacting Dr. Richard Lerner or Yibing Li at the Institute for Applied Research in Youth Development (http://ase.tufts.edu/iaryd). Engagement items were drawn from the Profiles of Student Life: Attitudes and Behaviors (PSL–AB) Survey, created by the Search Institute (Leffert et al. 1998), which can be used as a needs assessment tool and is available for purchase from the Search Institute (www.search-institute.org/survey-services/surveys/attitudes-behaviors).
Population	4-H study followed sample of grade 5 students from variety of racial/ethnic backgrounds in 13 states in rural, suburban, and urban areas through grade 11 (6,450 students from 34 states). (More than 2 million students in suburban, urban, and rural communities across the United States have responded to the PSL–AB Survey, developed for use with grades 6–12.)
Method	Student self-report questionnaire.
Background	Includes three subscales: behavioral school engagement, emotional school engagement, and cognitive engagement (the cognitive engagement subscale has not been included in a published study) (Lerner et al. 2008). Items included are part of a larger survey administered longitudinally to respondents with varying levels of involvement in community-based programs, such as 4-H, Boys and Girls Clubs, and YMCAs. They are adapted from items included in the PSL-AB.
Administration	Administered by: Trained members of the research staff in school or after-school program settings. Form: Paper and pencil questionnaire. Time: Scale is part of larger 4-H survey, which takes about two hours to administer. Training/instructions: Students were told that they could skip any question they did not want to answer.
Languages	English
What is measured	The engagement scale includes three subscales: • Behavioral engagement (five items): measures participation and effort (sample items: "I complete homework on time," "I work hard to do well"). • Emotional engagement (five items): measures positive affect and school belonging (sample items: "I feel happy to be part of school," "I enjoy the classes I am taking"). • Cognitive engagement (five items): measures school value (sample items: "I want to learn as much as I can at school," "School is important for future success").
Scoring/reporting	Scale scores are obtained by reverse scoring negatively worded items, so that higher scores indicate higher engagement for all items. Response formats are 0 = usually to 3 = never for some items and 0 = strongly agree to 3 = strongly disagree for others.

(CONTINUED)

TABLE A1 (CONTINUED)

4-H Study for Positive Youth Development: School Engagement Scale (4-H)

Feature	Description
Reliability	4-H developers report Cronbach's alphas for subscales of .70 (behavioral), .82 (emotional), and .90 (cognitive). PSL–AB developers report Cronbach's alpha for four school engagement items of .63 (Leffert et al. 1998).
Validity	Li et al. (2008) report evidence of criterion-related validity through positive correlations between 4-H emotional and behavioral engagement subscales and achievement and through negative correlations between emotional and behavioral engagement subscales and risk behaviors and depression.
Use	4-H engagement scales have been used only by developers in correlational studies using the 4-H sample. For the PSL-AB, users are given a report on the percentage of students in their community (overall and by race and gender) that indicated each asset. (School engagement is one of 40 developmental assets.)
References	Jelicic, H., Bobek, D. L., Phelps, E., Lerner, R. M., and Lerner, J. V. (2007). Using positive youth development to predict contribution and risk behaviors in early adolescence: findings from the first two waves of the 4-H study of positive youth development. *International Journal of Behavior Development, 31*(3), 263–273. Leffert, N., Benson, P. L., Scales, P. C., Sharma, A. R., Drake, D. R., and Blyth, D. A. (1998). Developmental assets: measurement and prediction of risk behaviors among adolescents. *Applied Developmental Science, 2*(4), 209–230. Lerner, R. M., Lerner, J. V., Phelps, E., et al. (2008). *The positive development of youth technical report: the 4-H study of positive youth development. Report of the findings from the first four waves of data collection*. Retrieved October 1, 2009, from http://ase.tufts.edu/iaryd/documents/4HStudyAnnualReport2008.pdf. Li, Y., Bebiroglu, N., Phelps, E., Lerner, R. M., and Lerner, J. V. (2008). Out-of-school-time activity participation, school engagement and positive youth development: findings from the 4-H study of positive youth development. *Journal of Youth Development, 3*(3), doi: 080303FA001. http://data.memberclicks.com/site/nae4a/JYD_09080303_final.pdf. Theokas, C., Almerigi, J., Lerner, R. M., Dowling, E. M., Benson, P. L., Scales, P. C., and von Eye, A. (2005). Conceptualizing and modeling individual and ecological asset components of thriving in early adolescence. *Journal of Early Adolescence, 25,* 113–143.

Source: Authors' compilation.

TABLE A2
Academic Engagement Scale of the Consortium on Chicago School Research Biennial Survey (CCSR/AES)

Feature	Description
Developer/website	Developed by the CCSR (http://ccsr.uchicago.edu).
Availability/ key source	Information on the CCSR/AES, including items, can be found on developer's website (http://ccsr.uchicago.edu/surveymeasures2007/engg.html). Information on larger set of survey items used in the biennial survey can be found at http://ccsr.uchicago.edu/surveymeasures2007. Use of CCSR survey items is permitted without charge; however, CCSR must be cited as source of the items in documentation and publications.
Population	Since 1999, this scale, along with other scales and measures important to the CCSR, has been administered to more than 100,000 demographically diverse elementary and high school students attending Chicago Public Schools.
Method	Student self-report questionnaire.
Background	The AES examines students' reports about their interest and engagement in learning in their reading or language arts courses. Questions ask about students' interest in topics they are studying and their engagement in reading or language arts classroom in general. First developed and administered by Chicago Public Schools in 1999, this instrument has been administered biennially as part of the its regular survey collection schedule. The survey is administered only in reading and language arts courses. Purpose of survey is to monitor how school district as a whole and individual schools are performing in areas assessed.
Administration	Administered by: Teachers, during reading or language arts courses. Form: Paper and pencil questionnaire. Time: Administered as part of larger survey conducted in Chicago, usually within a class period. Training/instructions: Examples of survey forms used by CCSR, which include a sample cover page and student instructions, are available on CCSR website.
Languages	Multiple (English, Polish, and Spanish; to obtain scales in other languages, contact CCSR)
What is measured	Scale contains six items intended to provide general measure of academic engagement. Sample items include "I work hard to do my best in this class" and "Sometimes I get so interested in my work I don't want to stop."
Scoring/reporting	Four-point response scale ranges from 1 (strongly disagree) to 4 (strongly agree). Scale scores can be developed by averaging responses to six items (after reverse scoring negatively worded items). Higher scores indicate that students report higher engagement. Based on their response pattern across the six items, students are grouped into four engagement categories: none, limited, moderate, or high. Schools can examine percentage of students that fall into each category over time and compare their results with those of other schools. Schools outside Chicago Public Schools can model their reporting of results on the sample reports available on the CCSR website (Consortium on Chicago School Research 2007a,b,c,d).
Reliability	CCSR website reports Cronbach's alpha of .68 for elementary students and .65 for high school students on the AES.
Validity	Sebring et al. (1996) find that student academic engagement correlated positively with student-reported academic pressure (students' views of their teachers' efforts to push them to higher levels of academic performance) and perceived teacher social support (degree to which students feel their teachers offer personal support). As expected, high school students had lower mean scores on the AES than did elementary school students. CCSR reports studies under way to examine the correlations between the instrument and academic achievement measures.
Use	Most published information on use of the AES has been gathered by CCSR using samples from Chicago Public Schools (Consortium on Chicago School Research 2007a, 2007b, 2007c, 2007d). Data gathered during biennial student, teacher, and principal survey data collection are used primarily as monitoring tool.

(CONTINUED)

TABLE A2 (CONTINUED)

Academic Engagement Scale of the Consortium on Chicago School Research Biennial Survey (CCSR/AES)

Feature	Description
References	Consortium on Chicago School Research at the University of Chicago. (2007a). Sample Elementary School Detailed Report. Retrieved October 12, 2009, from http://ccsr.uchicago.edu/ISR/. Consortium on Chicago School Research at the University of Chicago. (2007b). Sample Elementary School Summary Report. Retrieved October 12, 2009, from http://ccsr.uchicago.edu/ISR/. Consortium on Chicago School Research at the University of Chicago. (2007c). Sample High School Detailed Report. Retrieved October 12, 2009, from http://ccsr.uchicago.edu/ISR/. Consortium on Chicago School Research at the University of Chicago. (2007d). Sample High School Summary Report. Retrieved October 12, 2009, from http://ccsr.uchicago.edu/ISR/. Sebring, P. B., Bryk, A. S., Roderick, M., Camburn, E., Luppescu, S., Thum, Y. M., Smith, B., and Kahne, J. (1996). *Charting reform in Chicago: the students speak.* Chicago: University of Chicago, Consortium on Chicago School Research. Retrieved October 12, 2009,from http://ccsr.uchicago.edu/publications/ChartingReformInChicago_TheStudentsSpeak.pdf

Source: Authors' compilation.

TABLE A3

Attitudes Towards Mathematics Survey (ATM): Cognitive Engagement in Academic Work Subscales

Feature	Description
Developer/website	Developed and validated by Dr. Raymond B. Miller and colleagues at the University of Oklahoma. No website found.
Availability/ key source	Items for cognitive engagement subscales are shown in Miller et al. (1996), table 2.
Population	Administered to 297 suburban, southeastern high school students in their math courses. Versions of cognitive engagement items have also been used in studies with high school English students in a midwestern high school (Greene et al. 2004) and college-level samples (educational psychology students, preservice teachers, and students in statistics classes).
Method	Student self-report questionnaire.
Background	Developed by researchers studying relationship between various aspects of student motivation, engagement, and achievement. Original instrument developed and validated in 1993 (Miller, Behrens, and Greene 1993) and later revised by Miller et al. (1996). Cognitive engagement in academic work is measured by 28 of 83 items. Other variables measured included goals for doing academic work assigned in class and self-perceptions of ability for the class. Theoretical framework suggests that the type of cognitive strategies used by students in learning material correlates with achievement. Greene et al. (2004) reference "levels of processing" theory, which suggests that different strategies result in different achievement outcomes. Deep processing strategies are contrasted with shallow (rote) strategies.
Administration	Administered by: Teachers or members of research team. Form: Paper and pencil questionnaire. Time for 28 cognitive engagement items: About 15–20 minutes. Training/instructions: Because cognitive engagement items are worded to reflect strategy use in the particular content area, the instrument needs to be used after some instructional time has passed.
Language	English
What is measured	Contains five subscales assessing aspects of cognitive engagement in academic activities: • Self-regulation: 9 items (sample items: "Before a quiz or exam, I plan out how to study the material," "When I finish working a problem, I check my answer to see if it is reasonable."). • Deep cognitive strategy use: 7 items (sample items: "I work several examples of the same type of problem when studying mathematics so I can understand the problems better," "I classify problems into categories before I begin to work them."). • Shallow cognitive strategy use: 4 items (sample items: "I find reviewing previously solved problems to be a good way to study for a test," "I try to memorize the steps for solving problems presented in the text or class."). • Persistence: 8 items (sample items: "If I have trouble understanding a problem, I go over it again until I understand it," "When I run into a difficult homework problem, I usually give up and go on to the next problem."). • Effort: 1 item with 5 alternatives (extremely high ["probably as much effort as I've ever put into a class"] to extremely low ["probably the least amount of effort I've ever put into a class"]).
Scoring/reporting	Users can create average scores for four subscales with multiple items, as items are grouped by subscale. Some items must be reverse scored.
Reliability	Cronbach's alpha scores (excluding the effort subscale, which had only one item) ranged from .63 to .81 for the four subscales (Miller et al. 1996).
Validity	Miller et al. (1996) report that, of the four cognitive subscales, self-regulation had the strongest correlation with achievement; persistence was also significantly correlated with achievement. Deep cognitive strategy use was modestly correlated with achievement. Correlation between shallow cognitive strategy use and achievement was not significant. Miller et al. (1996) also report on construct validity (positive correlations of the cognitive engagement subscales with scales assessing students' perceived ability, beliefs about future consequences, and effort).

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TABLE A3 (CONTINUED)

Attitudes Towards Mathematics Survey (ATM): Cognitive Engagement in Academic Work Subscales

Feature	Description
Use	Cognitive engagement subscales have been used primarily by educational psychologists conducting correlational studies examining the relationship among motivational variables, use of learning strategies, and achievement. Greene et al. (2004) adapt items for use with high school students in English classes. Greene and Miller (1996); Ravindran, Greene, and DeBacker (2005); and Miller et al.(1993) use cognitive engagement items in studies with college students.
References	Greene, B. A., and Miller, R. B. (1996). Influences on achievement: Goals, perceived ability, and cognitive engagement. *Contemporary Educational Psychology, 21*(2), 181–192. Greene, B. A., Miller, R. B., Crowson, H. M., Duke, B. L., and Akey, K. L. (2004). Predicting high school students' cognitive engagement and achievement: Contributions of classroom perceptions and motivation. *Contemporary Educational Psychology, 29*(4), 462–482. Miller, R. B., Behrens, J. T., and Greene, B. A. (1993). Goals and perceived ability: impact on student valuing, self-regulation, and persistence. *Contemporary Educational Psychology, 18*(1), 2–14. Miller, R. B., Greene, B. A., Montalvo, G. P., Ravindran, B., and Nichols, J. D. (1996). Engagement in academic work: the role of learning goals, future consequences, pleasing others, and perceived ability. *Contemporary Educational Psychology, 21*(4), 388–422. Ravindran, B., Greene, B. A., and DeBacker, T. K. (2005). Predicting preservice teachers' cognitive engagement with goals and epistemological beliefs. *Journal of Educational Research, 98*(4), 222–232.

Source: Authors' compilation.

TABLE A4

Engagement versus Disaffection with Learning (EvsD): student and teacher reports

Feature	Description
Developer/website	Dr. Ellen Skinner, at Portland State University, provides access to most updated version of engagement scale (now called Engagement versus Disaffection with Learning scale) on her website (http://www.pdx.edu/psy/ellen-skinner) under "Assessments." Original engagement items were developed by Dr. James P. Connell and his colleagues at the University of Rochester (see Wellborn and Connell 1987; Wellborn 1991) as part of the Rochester Assessment Package.
Availability/ key source	Items are in appendixes A and B of Skinner, Kindermann, and Furrer (2009), available at http://www.pdx.edu/psy/ellen-skinner.
Population	Used with 1,018 students in grades 3–6 in suburban and rural schools. Items have also been used with samples of White and low-income racial/ethnic minority elementary, middle, and high school students in urban and suburban districts.
Method	Includes three methods: student self-report; teacher report on each student's engagement; and, for a subset of children, observations in the classroom.
Background	Student self-report and teacher report instruments were developed to assess components of a theory of student motivation (Connell 1990; Connell and Wellborn 1991; Deci and Ryan 1985; Skinner 1991; Skinner et al. 2009) that includes construct of engagement (versus disaffection) as key component of motivated action leading to student learning and achievement. Instruments assume that construct of engagement versus disaffection in the classroom ranges from enthusiastic, effortful, emotionally positive interactions with learning activities to apathetic withdrawal and frustrated alienation. Assessments include both positive manifestations of behavioral and emotional participation in classroom and withdrawal of behavioral and emotional participation and alienation from learning. Theoretical model of student motivation holds that student engagement (behavioral and emotional) is promoted when social context of learning meets students' basic psychological needs for relatedness, competence, and autonomy. Basic psychological needs are expected to be met in a context that provides involvement, structure, and autonomy support; neglectful, chaotic, or coercive learning contexts undermine students' needs and lead to disaffection.
Administration	*Student report* Administered by: Trained individuals read items to students. (In some studies, a second individual was present to monitor understanding and answer students' questions.) Form: Paper and pencil questionnaire, typically completed in classroom. Time: About 20–30 minutes. *Teacher report* Administered by: Researchers/evaluators provide copies of teacher report instrument (one for each student in their class) to participating teachers, who complete one rating form for each student. Time: A few minutes for each student in class.
What is measured	Student report contains 24 items in four subscales: • Behavioral engagement (5 items) taps effort, attention, and persistence in initiating and participating in learning activities (sample item: "When I'm in class, I listen very carefully."). • Behavioral disaffection (5 items) taps lack of effort and withdrawal from learning activities (sample item: "When I'm in class, I just act like I'm working."). • Emotional engagement (5 items) taps emotions indicating motivated involvement during learning activities (sample item: "I enjoy learning new things in class."). • Emotional disaffection (9 items) taps emotions indicating withdrawal during learning (sample item: "When we work on something in class, I feel discouraged."). Teacher report contains items that are grouped in same subscales as student report, with each subscale containing four items: • Behavioral engagement (sample item: "In my class, this student does more than required."). • Behavioral disaffection (sample item: "In my class, this student comes unprepared."). • Emotional engagement (sample item: "In my class, this student appears happy."). • Emotional disaffection (sample item: "In my class, this student is anxious.").

(CONTINUED)

TABLE A4 (CONTINUED)

Engagement versus Disaffection with Learning (EvsD): student and teacher reports

Feature	Description
Scoring/reporting	Subscale scores can be calculated as the average of items for subscale. For student self-report, response scale used ranges from 1 (not at all true) to 4 (very true). Structural analyses of item sets, conducted by Skinner, Kindermann, and Furrer (2009), indicate that items can be aggregated in different ways. Psychometric analyses show that subscales can be used separately or combined (by reverse coding the disaffection items and including them with the engagement items). Combinations include engagement (combining emotional and behavioral engagement items) versus disaffection (combining emotional and behavioral disaffection items) and behavioral (combining behavioral engagement and disaffection items) versus emotional (combining emotional engagement and disaffection items) engagement. Student profiles can also be reported (for example, high behavioral but low emotional engagement).
Reliability	Skinner, Kindermann, and Furrer (2009) report internal consistency reliabilities on a sample of students in grades 3–6 of .61–.85 for the four student subscales over two administrations from fall to spring and reliabilities for four teacher report subscales of .81–.87. Combining behavioral and emotional engagement items produced high levels of internal consistency (.79 and .86 for student report, .90 and .91 for teacher report). Interindividual stability was reported to be high. Cross-year correlations for subscales of engagement of .53–.68 for student self-reports and .65–.82 for teacher reports were reported.
Validity	Developers report evidence for construct validity through several methods. Skinner, Kindermann, and Furrer (2009) report that confirmatory factor analyses find that a four-factor model (distinguishing behavioral engagement, behavioral disaffection, emotional engagement, and emotional disaffection) was the best fit for both student and teacher report data. Four subscales correlated as expected: behavioral and emotional subscales correlated positively, and engagement and disaffection subscales correlated negatively. Teacher and student subscales showed modest agreement. (Agreement was higher for behavioral than emotional engagement.) Teacher reports correlated with external observer reports; student self-reports did not. Skinner et al. (2008) find expected age-grade patterns in which middle school students showed lower levels of engagement than did children in upper elementary school.
Use	Instruments have been used in published research that explores the multidimensional nature of engagement, changes over time, predictors of engagement, and various student profiles of engagement (see references below).
References	Connell, J. P. (1990). Context, self, and action: a motivational analysis of self-system processes across the life span. In D. Cicchetti and M. Beeghly (Eds.), *The self in transition*. Chicago: University of Chicago Press. Connell, J. P., Halpern-Felsher, B. L., Clifford, E., Crichlow, W., and Usinger, P. (1995). Hanging in there: behavioral, psychological, and contextual factors affecting whether African American adolescents stay in school. *Journal of Adolescent Research, 10*, 41–63. Connell, J. P., and Wellborn, J. G. (1991). Competence, autonomy, and relatedness: a motivational analysis of self-system processes. In M.R. Gunnar and L.A. Sroufe (Eds.), *Minnesota Symposium on Child Psychology Vol. 23: Self-processes and development*. Chicago: University of Chicago Press. Deci, E. L., and Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*. New York: Plenum Press. Skinner, E. A. (1991). Development and perceived control: a dynamic model of action in context. In M. Gunnar and L. A. Sroufe (Eds.), *Minnesota symposium on child psychology Vol. 23: Self processes in development*. Hillsdale, NJ: Erlbaum. Skinner, E. A., Kindermann, T. A., Connell, J. P., and Wellborn, J. G. (2009). Engagement as an organizational construct in the dynamics of motivational development. In K. Wentzel and A. Wigfield (Eds.), *Handbook of motivation at school*. Mahwah, NJ: Erlbaum. Skinner, E. A., Kindermann, T. A., and Furrer, C. J. (2009). A motivational perspective on engagement and disaffection: conceptualization and assessment of children's behavioral and emotional participation in academic activities in the classroom. *Educational and Psychological Measurement, 69*(3), 493–525. Skinner, E. A., Marchand, G., Furrer, C., and Kindermann, T. (2008). Engagement and disaffection in the classroom: part of a larger motivational dynamic. *Journal of Educational Psychology, 100*(4), 765–781. Wellborn, J. G. (1991). *Engaged vs. disaffected action: conceptualization and measurement of motivation in the academic domain*. Unpublished doctoral dissertation. Rochester, NY: University of Rochester. Wellborn, J. G., and Connell, J. P. (1987). *Rochester Assessment Package for Schools, Student Report*. Unpublished manuscript. Rochester, NY: University of Rochester.

Note: See table A9 for a related item set.

Source: Authors' compilation.

TABLE A5
High School Survey of Student Engagement (HSSSE)

Feature	Description
Developer/website	Developed by the Center for Evaluation and Education Policy (CEEP) at the Indiana University School of Education (http://www.indiana.edu/~ceep/hssse/). Dr. Ethan Yazzie-Mintz is the project director of the HSSSE.
Availability/ key source	The 2009 version is copyrighted. Upon registration, each school pays a nonrefundable participation/ user fee of $200 as well as a survey fee of $2 per student. Fees cover all survey materials, shipment of materials to the school, shipment of completed surveys back to the HSSSE office, scanning of completed surveys, and production and shipment of school data reports with survey results. A sample of the survey instrument can be found at http://www.indiana.edu/~ceep/hssse/survey.html.
Population	Piloted in 2003 with 7,200 students from four high schools, the survey has since been administered to large samples of high school students. In 2006 more than 100,000 students participated in the survey. From 2007 through 2009, the survey was administered to more than 200,000 students from rural, urban, and suburban school settings.
Method	Student self-report questionnaire.
Background	Since 2004 the HSSSE has been used to provide descriptive data on perceptions of national samples of high school students of their school work, the school learning environment, and their interaction with the school community. Periodic reports are available at http://www.indiana.edu/~ceep/hssse. The CEEP maintains a database of survey data from more than 300,000 students in more than 40 states. A middle school version of the instrument is being developed. The high school instrument builds on the National Survey of Student Engagement (NSSE), widely used to measure engagement and academic performance of college students. The NSSE has been used in developing national reports since the spring of 2000 (see http://nsse.iub.edu/index.cfm for additional information). Items on the 2008/09 HSSSE are described as assessing three dimensions of engagement: cognitive, intellectual, and academic engagement; social, behavioral, and participatory engagement; and emotional engagement. Survey can be used to guide planning for school improvement initiatives and to conduct long-term monitoring at the school or district level.
Administration	Administered by: School staff. Form: Paper and pencil questionnaire. Time: About 30 minutes. Training/instructions: Directions for students are included on the survey.
Language	English
What is measured	The 2009 version of the instrument includes 121 items that purport to measure three types of engagement: • Cognitive/intellectual/academic engagement (65 items) assesses students' perceptions of their effort toward, investment in, and strategies for learning. • Social/behavioral/participatory engagement (17 items) captures students' actions in social, extracurricular, and nonacademic school activities, including interactions with other students. • Emotional engagement (39 items) emphasizes students' feelings of connection (or lack of connection) to their school, including the ways and workings of the school and the people in their school.
Scoring/reporting	For schools purchasing HSSSE services, the CEEP provides analysis and reporting, including a customized report with mean comparisons and frequencies of student responses (item by item and by subscales) by grade, instructional track, race/ethnicity, and gender. A data file on a compact disc allows school personnel to conduct additional analyses. National HSSSE results and individual school results are reported for comparison, along with a guide for interpreting the mean comparison report. For schools seeking to improve student engagement, the CEEP offers technical assistance in selecting strategies for addressing identified issues.
Reliability	Studies conducted before 2008/09 generally presented survey results on an item-by-item basis and did not report reliability of internal consistency of subscales. Developers of the HSSSE considered reliability reported for the NSSE (Kuh 2004) as close approximation of the reliability of the HSSSE. As of fall of 2010, a reliability study of the HSSSE was in progress.

(CONTINUED)

TABLE A5 (CONTINUED)

High School Survey of Student Engagement (HSSSE)

Feature	Description
Validity	As of the fall of 2010, a validity study of the HSSSE was in progress but not yet available.
Use	The HSSSE has been used in describing engagement at the high school level in CEEP annual reports and other published articles of national survey results. Schools and districts have also used the survey for school improvement planning (see, for example, Shafer 2008). National HSSSE findings have informed discussions on college readiness (McCarthy and Kuh 2006), dropout prevention (Azzam 2008), and graduation rates (Stanley and Plucker 2008). Several dissertations have used the HSSSE in examining aspects of high school functioning (Mayr 2008; Frazier 2008; Chang 2008; Lambert 2007).
References	Azzam, A. (2008). Engaged and on track. *Educational Leadership, 65*(6), 93–95. Chang, D. (2008). A case study to determine what perceived factors, including student engagement, contribute to academic achievement in a high performing urban high school. (Doctoral dissertation). *Proquest Dissertations and Theses database.* (Publication No. AAT 3311154). Frazier, K. (2008). Factors including student engagement impacting student achievement in a high performing urban high school district: a case study. (Doctoral dissertation). *Proquest Dissertations and Theses database.* (Publication No. AAT 3311148). Kuh, G. D. (2004). *The National Survey of Student Engagement: conceptual framework and overview of psychometric properties*. Bloomington, IN: Indiana University, Center for Postsecondary Research and Planning. Lambert, A. (2007). Student engagement in high-performing urban high schools: a case study. (Doctoral dissertation). *Proquest Dissertations and Theses database.* (Publication No. AAT 3278370). Mayr, K. (2008). A case study of factors related to a high performing urban charter high school: investigating student engagement and its impact on student achievement. (Doctoral dissertation). *Proquest Dissertations and Theses database.* (Publication No. AAT 3311156). McCarthy, M., and Kuh, G. D. (2006). Are students ready for college? What student engagement data say. *Phi Delta Kappan, 87*(9), 664–669. Shafer, J. (2008, November). *KNIGHT line*. Retrieved October 9, 2009, from http://www.menloschool.org/data/files/gallery/KnightLineGallery/KnightLineNov2008.pdf. Stanley, K. R., and Plucker, J. A. (2008). *Improving high school graduation rates*. (Policy Brief 7). Bloomington, IN: Indiana University, Center for Evaluation and Education Policy. Yazzie-Mintz, E. (2007). *Voices of students on engagement: a report on the 2006 high school survey of student engagement*. Bloomington, IN: Indiana University, Center for Evaluation and Education Policy. Retrieved October 8. 2009, from http://www.indiana.edu/~ceep/hssse/images/HSSSE%20Overview%20Report%20-%202006.pdf.

Source: Authors' compilation.

TABLE A6
Identification with School Questionnaire (ISQ)

Feature	Description
Developer/website	Developed by Dr. Kristin E. (Voelkl) Finn, School of Education and Human Services, Adolescence Education Department, Canisius College, Buffalo, NY. No website was found.
Availability/ key source	Information on instrument development, scoring, abbreviated items, and how items map onto constructs measured is available in Voelkl (1996). For the full instrument, see appendix B of Finn et al. (2007).
Population	Developed using a sample of 3,539 grade 8 students from 163 schools in rural, urban, suburban, and inner-city settings. About 25 percent of the sample was Black, and 75 percent was White. The instrument has since been used by other researchers with samples including American Indian, Asian, Black, and Hispanic students as well as low-income students in middle school and high school.
Method	Student self-report questionnaire.
Background	Developed from a theory of student engagement in school called the participation-identification model (Finn 1989, 1993), the instrument was created to examine relationships between school identification and other variables. Developers were particularly interested in developing an affective measure of emotional withdrawal from school that could predict later dropping out. Gender and race differences in disengagement were also of interest. The instrument consists of two subscales: belongingness with school and valuing of school. Belongingness is defined as the degree to which a student feels that he or she is a significant member of the school community. Valuing is defined as the importance a student places on learning and school. Although this instrument is a measure of identification with school, some researchers also consider it a measure of emotional engagement.
Administration	Administered by: Teachers or others. Form: Paper and pencil questionnaire. Time: About 15 minutes.
Language	Available only in English.
What is measured	Instrument comprises 16 items: 9 items on the belongingness with school subscale and 7 on the valuing of school subscale. Sample items for the belongingness subscale include "I feel proud of being a part of my school," "The only time I get attention in school is when I cause trouble," and "School is one of my favorite places to be." Sample items for the valuing subscale include "School is more important than most people think," "I can get a good job even if my grades are bad," "Most of the things we learn in class are useless."
Scoring/reporting	A four-point response scale, ranging from 1 (strongly agree) to 4 (strongly disagree), is used for each item. Scale scores for individual students are obtained by reverse scoring necessary items, so that higher scores indicate a higher degree of identification with school, and then summing the scores of individual items. Students can be assigned a belongingness score or a valuing score (by summing the appropriate items) or an overall identification score (by summing all 16 items).
Reliability	Developer reports Cronbach's alphas of .76 for the belongingness scale and .73 for the valuing scale. Internal consistency for the identification measure as a whole is reported as .84 (Voelkl 1996). Other researchers have reported internal consistency reliabilities of .75–.83 for the full scale, .66–.78 for the belongingness scale, and .54–to .66 for the valuing scale (Bos et al. 2008; Kenny et al. 2003; Kenny et al. 2006; Sirin and Rogers-Sirin 2005; Wettersen et al. 2005).
Validity	Confirmatory factor analysis by developer provides evidence for construct validity of two subscales (Voelkl 1996). Criterion-related validity has been demonstrated by positive associations of the identification measure with achievement and teacher ratings of classroom participation (Voelkl 1997).
Use	Voelkl (1996) examines gender and racial/ethnic differences in school identification. Other studies investigate the relationship between school identification and other variables, such as career development (Kenny et al. 2003; Kenny et al. 2006); performance and achievement within minority populations (Sirin and Rogers-Sirin 2005; Voelkl 1997), academic dishonesty and cheating (Voelkl-Finn and Frone 2004); substance use (Voelkl and Frone 2000); aggression at school (Finn and Frone 2003); and stereotype threat (Osborne and Walker 2006). Instrument was used initially as part of follow-up to the Project STAR longitudinal study of the effects of class size on achievement (Finn and Achilles 1990) to examine the long-term effects that reduced class size in early grades had on subsequent student identification with school. School districts have also used this measure to evaluate effectiveness of programs (such as the BioSMART magnet program evaluation in St. Paul Public Schools).

(CONTINUED)

TABLE A6 (CONTINUED)
Identification with School Questionnaire (ISQ)

Feature	Description
References	Bos, H. M. W., Sandfort, T. G. M., de Bruyn, E. H., and Hakvoort, E. M. (2008). Same sex attraction, social relationships, psychosocial functioning, and school performance in early adolescence. *Developmental Psychology, 44*(1), 59–68. Finn, J. D. (1989). Withdrawing from school. *Review of Educational Research, 59*, 117–142. Finn, J. D. (1993). *School engagement and students at risk* (NCES 93470). National Center for Education Statistics. Retrieved October, 1, 2009, from http://nces.ed.gov/pubs93/93470.pdf. Finn, J. D., and Achilles, C. M. (1990). Answers and questions about class size: a statewide experiment. *American Educational Research Journal, 27*, 557–577. Finn, J. D., Boyd-Zaharias, J., Fish, R. M., and Gerber, S. B. (2007). *Project STAR and beyond: Database user's guide*. HEROS, Inc. Retrieved October 1, 2009, from http://www.heros-inc.org/starUsersGuide.pdf. Finn, K. V., and Frone, M. R. (2003). Predictors of aggression at school: the effect of school-related alcohol use. *NASSP Bulletin, 87*(636), 38–54. Kenny, M. E., Blustein, D. L., Chaves, A., Grossman, J. M., and Gallagher, L. A. (2003). The role of perceived barriers and relational support in the educational and vocational lives of urban high school students. *Journal of Counseling Psychology, 50*(2), 142–155. Kenny, M. E., Blustein, D. L., Haase, R. F., Jackson, J., and Perry, J. C. (2006). Setting the stage: career development and the student engagement process. *Journal of Counseling Psychology, 53*(2), 272–279. Osborne, J. W., and Walker, C. (2006). Stereotype threat, identification with academics, and withdrawal from school: why the most successful students of color might be most likely to withdraw. *Educational Psychology, 26*(4), 563–577. Perry, J. C. (2008). School engagement among urban youth of color: criterion pattern effects of vocational exploration and racial identity. *Journal of Career Development, 34,* 397–422. Sirin, S. R., and Rogers-Sirin, L. (2005). Components of school engagement among African American adolescents. *Applied Development Science, 9*(1), 5–13. Voelkl, K. E. (1996). Measuring students' identification with school. *Educational and Psychological Measurement, 56*(5), 760–770. Voelkl, K. E. (1997). Identification with school. *American Journal of Education, 105*(3), 294–318. Voelkl, K. E., and Frone, M. R. (2000). Predictors of substance use at school among high school students. *Journal of Educational Psychology, 92*(3), 583–592. Voelkl-Finn, K. E., and Frone, M. R. (2004). Academic performance and cheating: moderating role of school identification and self-efficacy. *Journal of Educational Research, 97*(3), 115–122. Wettersen, K. B., Guilmino, A., Herrick, C. G., Hunter, P. J., Kim, G. Y., Jagow, D., Beecher, T., Faul, K., Baker, A. A., Rudolph, S. E., Ellenbecker, K., and McCormick, J. (2005). Predicting educational and vocational attitudes among rural high school students. *Journal of Counseling Psychology, 52*(4), 658–663.

Source: Authors' compilation.

TABLE A7

Motivated Strategies for Learning Questionnaire (MSLQ), Cognitive Strategy Use and Self-Regulation Subscales

Feature	Description
Developer/website	Developed by Dr. Paul Pintrich and Dr. Elisabeth DeGroot, School of Education at the University of Michigan. Initially developed for use with college students (Pintrich et al. 1991, 1993). Questionnaire adapted for use with middle schools by developer of college version (Pintrich and DeGroot 1990). No website was found.
Availability/ key source	Information on middle school version of the measure, including items and subscales, is available in Pintrich and DeGroot (1990).
Population	Validation of middle school version conducted using sample of 173 grade 7 students across 15 classrooms. Middle school and college versions have been used in English- and non-English-speaking countries. In the United States, the instrument has been used by developers with primarily White middle- and working-class samples and by others with more diverse samples.
Method	Student self-report questionnaire.
Background	Initially designed as a self-report measure of college student learning as part of a grant to establish the National Center for Research to Improve Postsecondary Teaching and Learning, the college instrument contains 81 items assessing students' motivational orientation and use of cognitive and metacognitive strategies in a particular course. A 56-item version was adapted for middle school students. The middle school survey assesses motivational beliefs and self-regulated learning strategies. Cognitive strategy use scale and self-regulation scale have been used as measures of cognitive engagement in some studies. Measure designed to assess cognitive engagement in context of a particular class.
Administration	Administered by: Teachers or other appropriate adults. Form: Paper and pencil questionnaire. Time: 20–30 minutes. Training/instructions: Sample cover sheet with directions available in manual for college version (Pintrich et al. 1991).
Languages	Translated into Chinese, Farsi, Finnish, German, Greek, Hebrew, Korean, Norwegian, and Spanish.
What is measured	Middle school MSLQ contains five subscales, two of them relevant to student engagement. Cognitive strategy use has 13 items (sample items: "I outline the chapters in my book to help me study," "When I study for a test, I practice saying the important facts over and over to myself"). Self-regulation has 9 items (sample items: "I ask myself questions to make sure I know the material that I have been studying," "Before I begin studying, I think about the things I will need to do to learn"). Subscales can be used together or individually.
Scoring/reporting	Seven-point scale ranges from 1 (not at all true of me) to 7 (very true of me). Scale scores created by averaging responses to all items in the scale, after reverse scoring negatively worded items.
Reliability	Research by developer and colleagues report Cronbach's alphas of .83–.88 for cognitive strategy use scale and .63–.74 for self-regulation scale (Pintrich and DeGroot 1990; Wolters, Pintrich, and Karabenick 2005). Other researchers report similar internal consistency reliabilities across range of samples. Two assessments measure reliability and validity in Chinese and Spanish samples (Duncan and McKeachie 2005).
Validity	Factor analyses conducted on data from middle school students yielded five factors (Pintrich and DeGroot 1990). Additional evidence of construct validity is reported from correlational studies conducted by developers and colleagues showing that self-efficacy, interest, and task value correlate positively with cognitive strategy use and self-regulation (Pintrich 1999). Criterion-related validity demonstrated through correlations of strategy use and self-regulation with indicators of academic performance, such as course assignments, exams, and grades (Pintrich and DeGroot 1990; Wolters and Pintrich 1998; Wolters, Yu, and Pintrich 1996).
Use	Uses of MSLQ are described in Duncan and McKeachie (2005). Middle school version has been used primarily in correlational studies examining relationship between motivation, use of learning strategies, and achievement (Pintrich and DeGroot 1990; Wolters and Pintrich 1998). Middle school version has also been used as outcome measure in examining impacts of different aspects of instructional strategies, course structures, and interventions (Duncan and McKeachie 2005). College version has been used widely by instructors to obtain feedback on students and by student learning centers as a form of needs assessment.

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TABLE A7 (CONTINUED)

Motivated Strategies for Learning Questionnaire (MSLQ), Cognitive Strategy Use and Self-Regulation Subscales

Feature	Description
References	Duncan, T. G., and McKeachie, W. J. (2005). The making of the motivated strategies for learning questionnaire. *Educational Psychologist, 40(2),* 117–128. Pintrich, P. R. (1999). The role of motivation in promoting and sustaining self-regulated learning. *International Journal of Educational Research, 31*(6), 459–470. Pintrich, P. R., and DeGroot, E. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology, 82*(1), 33–40. Pintrich, P. R., Smith, D. A. F., Garcia, T., and McKeachie, W. J. (1991). *A manual for the use of the Motivated Strategies for Learning Questionnaire (MSLQ).* Ann Arbor, MI: University of Michigan, National Center for Research to Improve Postsecondary Teaching and Learning. Pintrich, P. R., Smith, D. A. F., Garcia, T., and McKeachie, W. J. (1993). Reliability and predictive validity of the Motivated Strategies for Learning Questionnaire (MSLQ). *Educational and Psychological Measurement, 53*(3), 801–813. Wolters, C. A. (2004). Advancing achievement goal theory: using goal structures and goal orientations to predict students' motivation, cognition, and achievement. *Journal of Educational Psychology, 96*(2), 236–250. Wolters, C. A., and Pintrich, P. R. (1998). Contextual differences in student motivation and self-regulated learning in mathematics, English, and social studies classrooms. *Instructional Science, 26*, 27–47. Wolters, C. A., Pintrich, P. R., and Karabenick, S. A. (2005). Assessing academic self-regulated learning. In K. A. Moore and L. H. Lippman (Eds.), *What do children need to flourish: conceptualizing and measuring indicators of positive development*. New York: Springer. Wolters, C. A., and Rosenthal, H. (2000). The relation between students' motivational beliefs and attitudes and their use of motivational regulation strategies. *International Journal of Educational Research, 33,* 801–820. Wolters, C. A., Yu, S., and Pintrich, P. R. (1996). The relation between goal orientation and students' motivational beliefs and self-regulated learning and academic learning. *Journal of Educational Psychology, 81*(3), 329–339.

Source: Authors' compilation.

TABLE A8

Motivation and Engagement Scale (MES) (formerly the Student Motivation Scale and the Student Motivation and Engagement Scale)

Feature	Description
Developer/website	Developed by Dr. Andrew J. Martin, the University of Sydney, and published by the Lifelong Achievement Group (www.lifelongachievement.com).
Availability/ key source	Available from the Lifelong Achievement Group for about $85. Cost includes two-year license to administer the survey to maximum of 750 students, user manual, score sheets, norms for converting raw scores, data entry templates, and testing guidelines. Survey materials are provided by email as PDF and Microsoft Word attachments. Instrument is copyrighted by the Lifelong Achievement Group and may not be used without a license. Sample items and summary of administration, constructs measured, and scoring are available from Lifelong Achievement Group, at www.lifelongachievement.com/Motivation and Engagement Materials Summary 2009.pdf.
Population	The MES-Junior School (elementary/middle school) version has been normed in Australia with 1,249 students, ages 9–13, across 63 classes in 15 schools. The MES-High School version has been normed with 21,579 students, ages 12–18, across 58 schools. Samples were predominately middle-class students from urban, rural, and suburban areas of Australia.
Method	Student self-report questionnaire.
Background	Instrument assesses adaptive and maladaptive cognitive and behavioral dimensions of motivation and engagement. Summary here focuses on junior and high school versions only; separate versions are available for use with participants in university/college, workplace, sports, and music settings. Measure includes 11 subscales reflecting a multidimensional model of motivation and engagement. Developer integrated large body of research on student motivation and engagement into single framework of practical use to educators. Instrument is used as package for various purposes including assessment, benchmarking, tracking, research, and diagnosis to identify students' levels of engagement and disengagement. The 11 dimensions work together to create individual student profile. Student strengths and weaknesses are identified from pattern of results. Motivational/engagement weaknesses can then be addressed using developer's Motivation and Engagement Workbook (see www.lifelongachievement.com/workbook.htm; workbook requires an additional license fee), which includes weekly modules and exercises for students for targeted interventions for particular student profiles.
Administration	Administered by: Teachers, psychologists, counselors, researchers, or other professionals during a class period, in small groups or individually. Form: Paper and pencil questionnaire or web-based survey (with permission and appropriate security). For high school version, students complete survey on their own and return it at the end of class or session. For junior school (elementary/middle school) version, teachers read items to students one at a time as students complete them. Time: Up to full class period for the entire scale; 20–30 minutes if only certain subscales are administered. Training/instructions: No training is required to administer the instrument. Guidelines are included with the license.
Language	English
What is measured	Questionnaire contains 11 subscales, each of which comprises 4 items, for a total of 44 items. Sample high school items for each of the subscales include: • Self-belief: "If I try hard, I believe I can do my schoolwork well." • Learning focus: "I feel very happy with myself when I really understand what I'm taught at school." • Valuing school: "Learning at school is important." • Persistence: "If I cannot understand my schoolwork, I keep trying until I do." • Planning: "Before I start a project, I plan out how I'm going to do it."

(CONTINUED)

TABLE A8 (CONTINUED)

Motivation and Engagement Scale (MES) (formerly the Student Motivation Scale and the Student Motivation and Engagement Scale)

Feature	Description
What is measured *(continued)*	• Study management: "When I do homework, I usually do it where I can concentrate best." • Disengagement: "I've given up being interested in school." • Self-sabotage: "Sometimes I don't try hard at school so I can have a reason if I don't do well." • Anxiety: "When I have a project to do, I worry about it a lot." • Failure avoidance: "The main reason I try at school is because I don't want to disappoint my parents." • Uncertain control: "When I don't do well at school I don't know how to stop that happening next time."
Scoring/reporting	Response scale ranges from 1 (strongly disagree) to either 7 for high school version or 5 for middle school version (strongly agree). Responses to 4 items on each of the 11 subscales are aggregated as a raw score and then converted to a normed score (motivation quotient) for that dimension. Students are then assigned a grade from A to D on each construct, based on number of standard deviations below or above the mean score from the norming sample. Survey license comes with worksheets for calculating scores and developing profile for each student.
Reliability	Developer reports mean Cronbach's alpha for the 11 subscales as .79 for the high school version (.77–.82 for individual scales) and .78 for the junior school version (.70–.87 for individual scales) (www.lifelongachievement.com; Martin 2009a,b). Average test-retest reliability for high school version is reported as .73 (.61–.81 for individual scales) (Martin 2008b).
Validity	Developer has conducted confirmatory factor analyses to demonstrate construct validity of the 11 subscales (Martin 2009a,b). Analyses demonstrate significant correlations with achievement and other academic outcomes, showing criterion-related validity.
Use	Developer has used instrument in various studies in Australia to evaluate effects of intervention programs (Martin 2005, 2007, 2008a), diagnose students with low motivation and engagement (Martin 2003), and examine differences between age and gender in motivation and engagement (Martin 2007). Howard (2006) conducted a study in the United States with a population of Black, urban high school students with low socioeconomic status, comparing the motivation and engagement of those promoted to grade 10 with those retained in grade 9.
References	Howard, D. M. (2006). African American students: instructional strategies to improve students' motivation to achieve. (Doctoral dissertation). *Proquest Dissertations and Theses database.* (Publication No. AAT 3216045). Martin, A. J. (2003). The student motivation scale: further testing of an instrument that measures school students' motivation. *Australian Journal of Education, 47*(1), 88–106. Martin, A. J. (2005). Exploring the effects of a youth enrichment program on academic motivation and engagement. *Social Psychology of Education, 8*(2), 179–206. Martin, A. J. (2007). Examining a multidimensional model of student motivation and engagement using a construct validation approach. *British Journal of Educational Psychology, 77*(2), 413–440. Martin, A. J. (2008a). Enhancing student motivation and engagement: the effects of a multidimensional intervention. *Contemporary Educational Psychology, 33*(2), 239–269. Martin, A. J. (2008b). Motivation and engagement in diverse performance domains: testing their generality across school, university/college, work, sport, music, and daily life. *Journal of Research in Personality, 42*(6), 1607–1612. doi: 10.1177/0013164409332214 Martin, A. J. (2009a). Motivation and engagement across the academic life span: a developmental construct validity study of elementary school, high school, and university/college students. *Educational and Psychological Measurement, 69*(5), 794–824. Martin, A. J. (2009b). *The Motivation and Engagement Scale*. Sydney: Lifelong Achievement Group. Retrieved October 8, 2009, from http://www.lifelongachievement.com

Source: Authors' compilation.

TABLE A9

Research Assessment Package for Schools (RAPS)

Feature	Description
Developer/website	Adapted in 1998 by Dr. James P. Connell, cofounder and president of the Institute for Research and Reform in Education (IRRE; www.irre.org) from a longer instrument (called the Rochester Assessment Package for Schools) developed by Connell and Wellborn (1991) while at the University of Rochester. (For more recent version of the Rochester Assessment Package for Schools, see table A4 and the website of Dr. Ellen Skinner.)
Availability/ key source	Items are in the manual, which can be downloaded from www.irre.org at no cost. The IRRE offers fee-based, online administration of its surveys to cover costs of customization, coordination, and reporting of results.
Population	Student self-report questionnaire has been used with variety of urban and suburban adolescent populations. Evaluations of the First Things First school reform model included repeated administration of student self-report over time with elementary, middle, and high school students in Kansas City and four other suburban and urban districts (see www.irre.org). Items have been used with large populations of Black, Hispanic, White, and low-income youth in urban districts engaged in comprehensive school reform. Description here is of secondary school version. There is also an elementary version.
Method	Two methods: student self-report questionnaire and teacher report of individual student engagement.
Background	In 1998 the IRRE made RAPS available to reflect its overarching organizational approach to school reform, as articulated in its First Things First model. Assessment package focuses on student engagement as central construct to monitor in reform but includes other scales believed to reflect constructs that predict engagement. Instrument includes items assessing three constructs: student engagement, beliefs about self, and experiences of interpersonal support from parents and teachers. There is also a RAPS-T instrument, on which teachers report student engagement of each of their students. Developers note three main purposes: to provide diagnostic information on populations of students, evaluate school improvement interventions that seek to increase student engagement, and monitor changes in engagement and other important dimensions over time. The 1998 student self-report and teacher report on students RAPS are abbreviated from longer instruments developed by researchers led by Dr. Connell at the University of Rochester in the 1980s for use in research testing a theoretical model of engagement (Connell and Ryan 1984; Connell and Wellborn 1991).
Administration	*Student self-report* Administered by: Responsible adult other than student's teacher. Form: Paper and pencil questionnaire. Time: Middle school student instrument (84 items) takes about 50 minutes of class time to administer. Engagement subscale (11 items) takes significantly less time. Training/instructions: Manual strongly recommends training those administering the survey and reading aloud all items. *Teacher report* Administered by: Researchers/evaluators provide copies of the form to teachers. Form: Paper and pencil questionnaire. Time: About 1 minute per student. Training/instructions: Teacher should complete all forms (one for each student) at same sitting.
Language	English
What is measured	*Student self-report* Middle school student self-report measure has engagement scale with 11 items consisting of two subscales: ongoing engagement in school and reaction to challenge. Ongoing engagement in school includes five items that assess aspects of behavioral and emotional engagement. Reaction to challenge includes six items about strategies students use when faced with negative or stressful events. All items are on a four-point scale ranging from 1 (not at all true) to 4 (very true). Sample item for ongoing engagement: "I work hard on my schoolwork." Sample item for reaction to challenge: "When something bad happens to me in school [like not doing well on a test or not being able to answer an important question in class], I say it was the teacher's fault."

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TABLE A9 (CONTINUED)

Research Assessment Package for Schools (RAPS)

Feature	Description
What is measured *(continued)*	*Teacher report on students* Teachers complete three items on each student using a four-point scale ranging from 1 (not at all true) to 4 (very true) of student: "In my class, this student seems tuned in," "This student comes to class prepared," and "This student does more than required."
Scoring/reporting	Ongoing engagement subscale score is average of responses to five items; reaction to challenge subscale score is average of six items. The 11 items can be combined into an overall engagement scale score. The teacher report measure results in a single score for each student that can then be averaged across students in a class.
Reliability	The manual reports internal consistency (Cronbach's alpha) for the engagement subscales of .68 for ongoing engagement, .69 for reaction to challenge, and .77 for the combined item set. Using 11-item student self-report engagement subscales with a sample of Latino middle school students, Murray (2009) reports an internal consistency of .75. The manual reports internal consistency of .87 for the teacher report. Klem and Connell (2004) report similar internal consistency findings for both student self-report and teacher report.
Validity	The manual reports on criterion-related validity of student self-report measure and teacher report measure of engagement. Significant positive correlations are reported between engagement measures and student performance (for example, attendance, standardized test scores). Significant positive correlations reported between middle school students' scores on engagement scale and subsequent high school academic performance. Information on construct validity reported in the manual includes correlations between engagement and other variables (for example, engagement and student perceptions of teacher support); correlations between student and teacher reports of engagement; and factor analyses of the scale items.
Use	The IRRE reports that engagement scale has been administered to more than 200,000 students in 81 elementary, middle, and high schools since 1997. Several evaluations of First Things First (implemented by the IRRE in urban districts) have been conducted by Manpower Development Corporation and Youth Development Strategies, Inc., using RAPS engagement items as outcome measure in assessing progress. Evaluations can be downloaded from the IRRE website (http://www.irre.org/publications/#third_party). One research use of student engagement items (in study on parent and teacher relationships as predictors of student engagement in Latino youth) was identified (Murray 2009).
References	Connell, J. P., and Ryan, R. M. (1984). A developmental theory of motivation in the classroom. *Teacher Education Quarterly, 11*(4), 64–77. Connell, J. P., and Wellborn, J. G. (1991). Competence, autonomy, and relatedness: a motivational analysis of self-system processes. In M. R. Gunnar and L. A. Sroufe (Eds.), *Minnesota symposium on child psychology: Vol. 23. Self processes and development.* Hillsdale, NJ: Erlbaum. Gambone, M. A., Klem, A., Moore, W. P., and Summers, J. A. (2002*). First Things First: creating the conditions and capacity for community-wide reform in an urban school district*. Philadelphia, PA: Gambone and Associates. Youth Development Strategies, Inc. Retrieved October 8, 2009, from http://www.ydsi.org/ydsi/pdf/First_Things_First.pdf. Gambone, M. A., Klem, A. M., Summers, J. A., Akey, T. M., and Sipe, C. L. (2004). *Turning the tide: the achievements of the First Things First education reform in the Kansas City, Kansas Public School district* (Executive Summary). Youth Development Strategies, Inc. Retrieved October 8, 2009, from http://www.ydsi.org/ydsi/pdf/KCSExecSummaryRev6A.pdf. IRRE (Institute for Research and Reform in Education). (1998). *Research Assessment Package for Schools (RAPS) manual for elementary and middle school assessments*. Retrieved October 7, 2009, from http://www.irre.org/publications/pdfs/RAPS_manual_entire_1998.pdf. Klem, A. M., and Connell, J. P. (2004). Relationships matter: linking teacher support to student engagement and achievement. *Journal of School Health, 74*(7), 262–272. Murray, C. (2009). Parent and teacher relationships as predictors of school engagement and functioning among low-income urban youth. *The Journal of Early Adolescence, 29*(3), 375–404. Quint, J. C., Bloom, H. S., Black, A. R., Stephens, L., and Akey, T. M. (2005). *The challenge of scaling up educational reform: findings and lessons from First Things First* (Executive Summary). Manpower Demonstration Research Corporation. Retrieved October 8, 2009 from http://www.mdrc.org/publications/412/execsum.html.

Source: Authors' compilation.

TABLE A10
School Engagement Measure (SEM)-MacArthur Network

Feature	Description
Developer/website	Developed by Dr. Phyllis Blumenfeld and Dr. Jennifer Fredricks, Connecticut College, as part of the MacArthur Network for Successful Pathways through Middle Childhood. (http://childhood.isr.umich.edu).
Availability/ key source	Items from three engagement subscales are available in Fredricks et al. (2005). Contact Dr. Fredricks (jfred@conncoll.edu) for permission to use measure.
Population	Used initially with urban, low-income, primarily Black and Hispanic sample of 641 students in grades 3–5 attending neighborhood schools, the instrument has since been used in other studies of low-income, ethnically diverse upper elementary school students (Goldschmidt, 2008).
Method	Student self-report questionnaire.
Background	Developed for a study for the MacArthur Network for Successful Pathways through Middle Childhood, a multidisciplinary group of scholars studying students 6–12. Engagement items are part of larger longitudinal survey measure developed for study of relationship between classroom context and engagement among urban minority students in grades 3–5. Survey items include items drawn from variety of existing measures of motivation and classroom climate as well as new items. Measure has three engagement subscales (behavioral, emotional, and cognitive).
Administration	Administered by: Teachers or members of the research team. Form: Paper and pencil questionnaire. Time: School engagement items are part of larger survey that takes 30 minutes to administer. Training/instructions: Survey items should be read to students in class.
Languages	English and Spanish.
What is measured	Measure includes three subscales: five behavioral engagement items (sample items: "I pay attention in class," "I get in trouble at school" [reverse scored]); six emotional engagement items (sample items: "I feel happy at school," "I am interested in the work at school"); and eight cognitive engagement items (sample items: "When I read a book, I ask myself questions to make sure I understand what it is about," "I read extra books to learn more about things we do in school").
Scoring/reporting	Five-point scale ranges from 1 (never) to 5 (all of the time). Scale scores are created by averaging responses to all items in scale, after reverse scoring negatively worded items.
Reliability	Developers report Cronbach's alpha of .72–.77 for behavioral engagement, .83–.86 for emotional engagement, and .55–.82 for cognitive engagement. In light of initial low reliability for cognitive engagement, developers made several changes in cognitive items from wave 1 to wave 2 (Blumenfeld et al. 2005; Fredricks et al. 2005). Other researchers report similar reliabilities for the three scales (Goldschmidt 2008).
Validity	Developers report several analyses that inform the construct validity of measure (Blumenfeld et al. 2005; Fredricks et al. 2005). Factor analysis of items resulted in three subscales (behavioral engagement, emotional engagement, and cognitive engagement); the subscales correlated moderately with students' perceptions of aspects of their academic and social context, school value, and school attachment. Subscale scores were compared with data from interviews on engagement collected from the same sample of students. Developers report positive correlations between subscales and numerical ratings given to interview responses. Developers report expected subscale score differences by age (declines in scores with increasing age, from grades 3 to 5). Other researchers report that engagement subscales correlate positively with social skills and negatively with externalizing behaviors (Goldschmidt 2008).
Use	Used primarily in correlational research studies (Blumenfeld et al. 2005; Fredricks et al. 2005; Goldschmidt 2008), items are also outlined in a *Child Trends* brief as a suggested measure of school engagement for out-of-school time practitioners.

(CONTINUED)

TABLE A10 (CONTINUED)

School Engagement Measure (SEM)-MacArthur Network

Feature	Description
References	Blumenfeld, P., Modell, J., Bartko, W. T., Secada, W., Fredricks, J., Friedel, J., and Paris, A. (2005). School engagement of inner city students during middle childhood. In C. R. Cooper, C. Garcia Coll, W. T. Bartko, H. M. Davis, and C. Chatman (Eds.), *Developmental pathways through middle childhood: rethinking diversity and contexts as resources*. Mahwah, NJ: Lawrence Erlbaum. Fredricks, J. A., Blumenfeld, P. C., Friedel, J., and Paris, A. (2005). School engagement. In K. A. Moore and L. Lippman (Eds.), *Conceptualizing and measuring indicators of positive development: what do children need to flourish?* New York: Kluwer Academic/Plenum Press. Goldschmidt, E. P. (2008). The role of social competence in the relation between classroom behaviors and school engagement. (Doctoral dissertation). *ProQuest Dissertations and Theses database*. (Publication No. AAT 3327313). Lippman, L., and Rivers, A. (2008). *Assessing school engagement: a guide for out-of-school time program practitioners*. (Research-To-Results Brief Publication 2008-39). Child Trends. Retrieved October 5, 2009, from http://www.childtrends.org/Files/Child_Trends-2008_10_29_RB_SchoolEngage.pdf.

Source: Authors' compilation.

TABLE A11

School Engagement Scale (also known as School Engagement Questionnaire [SEQ])

Feature	Description
Developer/website	Developed by Dr. Sanford M. Dornbusch and Dr. Laurence D. Steinberg. Dr. Dornbusch is an emeritus professor in the Department of Sociology at Stanford University (http://www.stanford.edu/dept/soc/). Dr. Steinberg is a professor in the Department of Psychology at Temple University (www.temple.edu/psychology/lds).
Availability/ key source	Perry (2008) and Kenny et al. (2003) describe the instrument. Copies of the questionnaire can be obtained from Dr. Dornbusch or Dr. Steinberg.
Population	Originally used with three-year longitudinal sample of about 12,000 students in nine high schools in Wisconsin and Northern California comprising a variety of socioeconomic statuses, ethnic backgrounds, and locales (Steinberg 1996), the instrument was subsequently used in studies with racially diverse high school students in rural and urban areas in the Northeast and Midwest.
Method	Student self-report questionnaire.
Background	Scale measures high school students' self-reported effort or investment in particular classes, as reflected in their time spent on homework assignments and their attendance, concentration, and attention in class. Original measure repeated same four items for each of three classes (math, English, social studies). Subsequent studies used eight items (four items repeated for just two classes, math and English). A large, national, descriptive study using the scale in nine high schools in Wisconsin and Northern California describes how parents, peers, and communities influence students' commitment to school (Steinberg 1996). The author uses several school engagement measures (including an emotional engagement work orientation scale) that may be of interest to researchers and educators. (This table describes only the school engagement scale, which was identified as being used in subsequent research and evaluations.)
Administration	Administered by: Teachers or other appropriate adults. Form: Paper and pencil questionnaire. Time: 10–20 minutes.
Language	English
What is measured	As used in studies reported here, the SEQ assesses a single construct (self-reported engagement in either two or three classes). The items (either 8 for 2 classes or 12 for 3 classes): • Homework: "How much time do you put into homework each week, including reading assignments?" (1 = None, 2 = About 15 minutes, 3 = About 30 minutes, 4 = About an hour, 5 = About 2 or 3 hours, 6 = About 4 hours or more, 7 = Not taking this class) • Attendance: "How often do you cut (an unexcused absence) each of these classes?" (1 = Almost every day, 2 = Once or twice a week, 3 = A few times a month, 4 = A few times a year, 5 = Never cut, 6 = Never taken this subject) • Classroom attention: "How often do you really pay attention during each of these classes?" (1 = Never, 2 = Seldom, 3 = Fairly often, 4 = Usually, 5 = Always, 6 = Never taken this subject) • Classroom concentration: "How often does your mind wander in each of these classes?" (1 = Always, 2 = Usually, 3 = Fairly often, 4 = Seldom, 5 = Never, 6 = Never taken this subject)
Scoring/reporting	Original scoring process used by developers involved first averaging scores for classroom attention and classroom concentration (which were assumed to measure same concept). The homework, attendance, and classroom attention/concentration scores were then summed to produce overall measure of engagement. Subsequent researchers have created composite scores by summing across all four questions to obtain an overall measure of engagement. In both cases, higher ratings indicate a stronger level of self-reported engagement with school classes.
Reliability	Original scale included four items for each of three subject areas (math, English, and social studies), with a reported Cronbach's alpha's of .86 (Dornbusch and Steinberg 1990; Taylor et al. 1994). Researchers using the eight-item version (for math and English classes) reported Cronbach's alphas of .74–.80 (Perry 2008; Kenny et al. 2003).

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TABLE A11 (CONTINUED)

School Engagement Scale (also known as School Engagement Questionnaire [SEQ])

Feature	Description
Validity	Criterion-related validity (in terms of positive correlations of the measure with grades) and evidence of construct validity (including correlations of engagement with student ratings of academic ability and perceptions of importance of school) were reported (Taylor et al. 1994).
Use	Four research studies use scale with high school students to understand relationships between variables such as self-reported vocational exploration, racial/ethnic identity, and engagement/identification with school (Perry 2008; Kenny et al. 2003. Taylor, et al. 1994; Wettersten et al. 2005). Instrument also used in program evaluation of Tools for Tomorrow in Massachusetts and included in evaluation plan as one of four measures to assess the level of school engagement for the students who participate.
References	Dornbusch, S., and Steinberg, L. (1990). *Measures of school engagement*. Unpublished manuscript, Philadelphia, PA: Temple University Department of Psychology. Kenny, M., Blustein, D., Chaves, A., Grossman, J., and Gallagher, L. (2003). The role of perceived barriers and relational support in the educational and vocational lives of urban high school students. *Journal of Counseling Psychology, 50*, 142–155. Perry, J. (2008). School engagement among urban youth of color: criterion pattern effects of vocational exploration and racial identity. *Journal of Career Development*, *34*(4), 397–422. Sparks, E. *Evaluation Plan* (for Tools for Tomorrow). Boston College. Retrieved October 12, 2009, from http://www2.bc.edu/~blusteid/Evaluationplanliz.pdf. Steinberg, L. (1996). *Beyond the classroom: why school reform has failed and what parents need to do*. New York: Simon and Shuster. Taylor, R., Casten, R., Flickinger, S., Roberts, D., and Fulmore, C. (1994). Explaining the school performance of African-American adolescents. *Journal of Research on Adolescence*, *4*(1), 21–44. Wettersten, K. B., Gulmino, A., Herrick, C. G., Hunter, P. J., Kim, G. Y., Jagow, D., Beecher, T., Faul, K., Baker, A. A., Rudolph, S. E., Ellenbecker, K., and McCormick, J. (2005). Predicting educational and vocational attitudes among rural high school students. *Journal of Counseling of Psychology, 52*(4), 658–663.

Source: Authors' compilation.

TABLE A12
School Success Profile (SSP)

Feature	Description
Developer/website	Developed by Dr. Gary Bowen and Dr. Jack Richman, Jordan Institute for Families, School of Social Work, University of North Carolina at Chapel Hill, in partnership with Communities in Schools (www.schoolsuccessprofile.org or www.schoolsuccessonline.com/).
Availability/ key source	Instrument is available at www.schoolsuccessprofile.org or www.schoolsuccessonline.com/. It is copyrighted and may not be used without permission from developers. Costs for sites to use instrument depend on nature of request; charge to take online version is $2 per student, with a $350 registration fee per contract. (A single contract can include multiple schools or locations.) Sites are provided for access to online resource materials, administration, individual and group reports, and "evidence-based" practice strategies. The 2005 version of the instrument can be found in Bowen and Richman (2005). Additional information is available in Bowen, Rose, and Bowen (2005).
Population	Initially tested with 805 students at 26 middle schools in North Carolina (Richman, Rosenfeld, and Bowen 1998), the instrument was subsequently used with more racially/ethnically diverse and low-income students in middle and high schools.
Method	Student self-report questionnaire.
Background	Survey is based on contextual perspective suggesting that social environment has powerful effect on child's development and success in school. Overarching purpose is to provide insight into how students perceive themselves and their environments, which can be useful for developing effective strategies for promoting student success. Initially developed in 1993, the survey has undergone five revisions (in 1993, 1997, 2001, 2005, and 2008) to strengthen coverage of social environment domains and ensure manageable length for administration. It currently covers 22 core dimensions intended to assess students' perceptions of their social environment and their individual adaptation to it. Questions related to individual adaptation are divided into two categories: (a) personal beliefs and well-being and (b) school attitudes and behavior. School engagement and trouble avoidance subscales fall under the second category. Schools can use survey to identify areas in need of improvement, which can serve as impetus for implementation of interventions to address these areas. Survey can also assess how well intervention efforts are addressing areas of need.
Administration	Administered by: Trained member of school staff acting as onsite monitor. Form: Administered in school computer lab. Time: Depending on number of subscales used, survey may take up entire class period or longer. Training/instructions: Training materials for clients who register are available from developer's site. Administration and intervention training are available to clients through online webinars. Training requires online tool for real-time communication at remote sites. Onsite monitor enters unique serial number and password assigned to each student. Short video introduces students to survey and provides instructions for completing it.
Languages	English and Spanish; parts of the survey have been translated into Hebrew, Lithuanian, Portuguese, and Romanian
What is measured	School engagement subscale includes four school engagement items answered on a three-point scale ranging from "not like me" to "a lot like me." Sample items include "I find school fun and exciting," "I look forward to going to school," "I look forward to learning new things at school," and "I am often bored at school." Trouble-avoidance subscale assesses the extent to which youth report that they have avoided problem behaviors in the past 30 days that reflect getting into trouble at school. All 11 trouble avoidance items are answered on a "never in the past 30 days" to "more than twice in the past 30 days" three-point scale. Sample items include "I turned in a homework assignment late or not at all" and "I cut class at least once."

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TABLE A12 (CONTINUED)
School Success Profile (SSP)

Feature	Description
Scoring/reporting	All scoring is done by developer. School sites download summary profiles from the Internet. Access to profiles is password protected; sites have access only to their own data. Instrument provides data in the form of individual student profiles and site-level aggregate profiles. Integrated query system allows practitioners to examine group-level results within student subgroups. Each of the 22 dimensions on students or sites is assigned a color corresponding to cutoffs based on national norms, criterion analysis, and expert review. (The developer indicates 30 core dimensions; however, all publicly available information indicates 22.) Each dimension reflects continuum of protection from red (potential risk) to yellow (some caution may be warranted) to green (potential asset). Reference information on the school or child is included in profile result.
Reliability	Reports and articles indicate internal consistency of the two subscales, with Cronbach's alphas of .75–.80 for school engagement scale and .66–.82 for trouble avoidance scale (Bowen, Rose, and Bowen 2005).
Validity	The developers and researchers report on the construct and criterion-related validity of the two subscales (Bowen and Bowen 1999; Bowen, Bowen, and Ware 2002; Bowen et al. 2008; Garcia-Reid 2007; Garcia-Reid, Reid, and Peterson 2005; Woolley and Bowen 2007). Student perceptions of teacher support, parent support, and peer support all correlate positively with student engagement. Neighborhood safety, for which high scores mean less safe neighborhoods, correlates negatively with student engagement. Trouble avoidance scores (high scores mean more troubled behavior) correlate positively with family poverty, negative neighborhood peer culture, students' personal experiences with crime and violence, and neighborhood social disorganization. Parental education support and supportive parenting correlate negatively with trouble avoidance. Correlations of the two subscales with academic achievement were not reported.
Use	Instrument has been used to provide needs assessment information to schools and districts to inform intervention and prevention planning (see www.schoolsuccessprofile.org). Website provides a handout on "strategies to strengthen school success profile dimensions," which offers ideas for how to address low scores on each of the 22 tapped dimensions. The survey has been used most extensively in North Carolina, where it was developed.
References	Bowen, G. L., and Richman, J. M. (2005). *School Success Profile*. Chapel Hill, NC: University of North Carolina at Chapel Hill, Jordan Institute for Families, School of Social Work. Retrieved October 8, 2009, from http://www.uncssp.org/documents/SSP_Survey.pdf. Bowen, G. L., Rose, R. A., and Bowen, N. K. (2005). *The reliability and validity of the School Success Profile*. Bloomington, IN: Xlibris Corporation. Bowen, G. L., Rose, R. A., Powers, J. D., and Glennie, E. J. (2008). The joint effects of neighborhoods, schools, peers, and families on changes in the school success of middle school students. *Family Relations*, *57*, 504–516. Bowen, G. L., Wooley, M. E., Richman, J. M., and Bowen, N. K. (2001). Brief intervention in schools: the School Success Profile. *Brief Treatment and Crisis Intervention, 1*, 43–54. Bowen, N. K., and Bowen, G. L. (1999). Effects of crime and violence in neighborhoods and schools on the school behavior and performance of adolescents. *Journal of Adolescent Research, 14*, 319–342. Bowen, N. K., Bowen, G. L., and Ware, W. B. (2002). Neighborhood social disorganization, families, and the educational behavior of students. *Journal of Adolescent Research, 17*, 468–490. Garcia-Reid, P. (2007). Examining social capital as a mechanism for improving school engagement among low income Hispanic girls. *Youth Society, 39*, 164–181. Garcia-Reid, P., Reid, R. J., and Peterson, N. A. (2005). School engagement among Latino youth in an urban middle school context: valuing the role of social support. *Education and Urban Society, 37*, 257–275. Powers, J. D., Bowen, G. L., and Rose, R. A. (2005). Using social environment assets to identify intervention strategies for promoting school success. *Children and Schools, 27*, 177–187. Richman, J. M., Rosenfeld, L. B., and Bowen, G. L. (1998). Social support for adolescents at risk of school failure. *Social Work, 43,* 309–323. Woolley, M. E., and Bowen, G. L. (2007). In the context of risk: supportive adults and the school engagement of middle school students. *Family Relations, 56*, 92–104.

Source: Authors' compilation.

TABLE A13
Student Engagement Instrument (SEI)

Feature	Description
Developer/website	Developed by Dr. James Appleton, Gwinnett County Public Schools, Georgia, and Dr. Sandra Christenson, University of Minnesota. No website was found.
Availability/ key source	Scale development, validation, and items are available in Appleton et al. (2006) and Betts et al. (forthcoming).
Population	Scale development was conducted using a sample of 1,931 grade 9 students from an urban, ethnically diverse, majority low-income school district. Developer conducted later validation studies using students in grades 6–12. Other studies have also used instrument with middle school and high school students (Betts et al. forthcoming; Reschly et al. 2008).
Method	Student self-report questionnaire.
Background	Instrument consists of six subscales measuring two constructs: psychological engagement and cognitive engagement. As noted in program evaluations of the Check and Connect (www.ici.umn.edu/checkandconnect) intervention developed to reduce dropout rates (Anderson et al. 2004), engagement is thought to consist of four subtypes: academic, behavioral, cognitive, and psychological. The Student Engagement Instrument was developed to go beyond observable indicators of academic and behavioral engagement (time on task, attendance, homework completion) to measure the cognitive and psychological aspects of engagement as reported by students.
Administration	Administered by: Teachers or other appropriate adults. Form: Paper and pencil questionnaire. Time: 20–30 minutes. Training/instructions: Developers suggest reading questions aloud to control for differences in reading ability.
Language	English
What is measured	Original questionnaire contained six subscales that measure psychological or cognitive engagement. *Psychological engagement* • Teacher-student relationships (9 items): Sample items: "Adults at my school listen to the student," "The school rules are fair." • Peer support for learning (6 items): Sample items: "I have some friends at school," "Other students at school care about me." • Family support for learning (4 items): Sample items: " My family/guardian(s) are there for me when I need them," "My family/guardian(s) want me to keep trying when things are tough at school." *Cognitive engagement* • Control and relevance of schoolwork (9 items): "The tests in my classes do a good job of measuring what I'm able to do," "Learning is fun because I get better at something." • Future aspirations and goals (5 items): "I am hopeful about my future," "School is important for achieving my future goals." • Extrinsic motivation (2 items): "I'll learn, but only if the teacher gives me a reward."
Scoring/reporting	Four-point response scale ranges from strongly disagree to strongly agree. Negatively worded items are reverse scored. Scale scores are calculated by summing or averaging individual items. Item-scale mapping is described in Appleton et al. (2006).
Reliability	Appleton et al. (2006) report internal consistencies (Cronbach's alphas) of .88 for teacher-student relationships, .80 for control and relevance of schoolwork, .82 for peer support for learning, .78 for future aspirations and goals, .76 for family support for learning, and .72 for extrinsic motivation. Using a 25-item version of the instrument across five subscales, Reschly et al. (2008) find internal consistencies of .77–.92.

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TABLE A13 (CONTINUED)

Student Engagement Instrument (SEI)

Feature	Description
Validity	Appleton et al. (2006) demonstrate the construct validity of the six subscales using a confirmatory factor analysis. Betts et al. (forthcoming) confirm evidence of the validity of all subscales except extrinsic motivation. Engagement subscales correlate with measures of academic performance and behavior, demonstrating criterion-related validity through positive relationships with grade point average and reading and math achievement and negative relationships with frequency of suspensions.
Use	In addition to use by developer, instrument has been used in several research studies on engagement in school (Reschly et al. 2008; Lewis et al. 2009). Dr. Appleton has used instrument in Gwinnett County Public Schools in Georgia to create district, school, and individual student profiles to provide information to advisors that may supplement existing knowledge about students' achievement.
References	Anderson, A. R., Christenson, S. L., Sinclair, M. F., and Lehr, C. A. (2004). Check and Connect: the importance of relationships for promoting engagement with school. *Journal of School Psychology, 42,* 95–113. Appleton, J. J., Christenson, S. L., and Furlong, M. J. (2008). Student engagement with school: critical conceptual and methodological issues of the construct. *Psychology in the Schools, 45,* 369–386. Appleton, J. J., Christenson, S. L., Kim, D., and Reschly, A. L. (2006). Measuring cognitive and psychological engagement: validation of the Student Engagement Instrument. *Journal of School Psychology, 44,* 427–445. Betts, J. E., Appleton, J. J., Reschly, A. L., Christenson, S. L., and Huebner, E. S. (Forthcoming). A study of the factorial invariance of the Student Engagement Instrument (SEI): results from middle and high school students. *School Psychology Quarterly.* Lewis, A. D., Huebner, E. S., Reschly, A. L., and Valois, R. F. (2009). The incremental validity of positive emotions in predicting school functioning. *Journal of Psychoeducational Assessment*, *27,* 397–408. Moreira, P. A. S., Machado Vaz, F., Dias, P. C., and Petracchi, P. (2009). Psychometric properties of the Portuguese version of the Student Engagement Instrument. *Canadian Journal of School Psychology, 24*(4), 303–317. Reschly, A. L., Huebner, E. S., Appleton, J. J., and Antaramian, S. (2008). Engagement as flourishing: the contribution of positive emotions and coping to adolescents' engagement at school and with learning. *Psychology in the Schools, 45,* 419–431.

Source: Authors' compilation.

TABLE A14
Student School Engagement Survey (SSES)

Feature	Description
Developer/website	Developed by the National Center for School Engagement (NCSE), an initiative of the Partnership for Families and Children (www.schoolengagement.org).
Availability/ key source	Survey items and scale development information are available in National Center for School Engagement (2006a).
Population	Initially tested at three intervention sites with about 150 students (elementary school through high school), the instrument has been used with both ethnically diverse and low-income students.
Method	Student self-report questionnaire.
Background	Developed for use as outcome measure in evaluating interventions aimed at reducing truancy. The NCSE compiled items from pre-existing instruments, organizing them into three subscales: behavioral engagement, cognitive engagement, and emotional engagement. Survey focuses on psychological investment in learning, affective reactions in the classroom, and school conduct.
Administration	Administered by: Teachers or other appropriate adults. Form: Paper and pencil questionnaire. Time: 30–45 minutes. Training/instructions: No information available.
Language	English
What is measured	Questionnaire contains total of 45 items on three subscales. Items were adapted from several existing measures. Most items are answered on a "strongly agree" to "strongly disagree" scale. • Emotional engagement (16 items): Sample questions: "I feel excited by the work in school," "Most of my teachers care about how I'm doing," "I am happy to be at my school." • Cognitive engagement (22 items): Sample questions: "I want to go to college, " "When I read a book, I ask myself questions to make sure I understand what it is about," "I check my schoolwork for mistakes." • Behavioral engagement (7 items): Sample questions: "When I am in class, I just pretend I am working," "I get in trouble at school," "I try to stay home from school." Recent studies have used a shortened version of the questionnaire, with five engagement items per subscale.
Scoring/reporting	No information provided for scoring and reporting. However, items are mapped onto scales and can be summed to create scale scores.
Reliability	National Center for School Engagement (2006a) provides internal consistency measures of reliability for the three subscales, with Cronbach's alpha of .88–.90 for emotional engagement, .87–.92 for cognitive engagement, and .49–.80 for behavioral engagement. The low reliability for the behavioral engagement scale was present at only one of the three intervention sites; values at the other two sites for this subscale were .79 and .80. A 2009 study conducted by the NCSE using five items per engagement subscale reports internal consistencies of .75–.78 for behavioral engagement, .77–.82 for cognitive engagement, and .81–.83 for emotional engagement.
Validity	National Center for School Engagement (2006a) shows evidence of criterion-related validity of the subscales through positive correlations of the three subscales with grades and attendance. No factor analysis of items was provided, but three engagement subscales were reported to correlate positively.
Use	Reports on the NCSE website show use of the measure to evaluate the impact of truancy prevention initiatives on student engagement (Finlay and Heilbrunn 2006; NCSE 2006b) and to study the relationships between peer victimization, achievement, and attendance with student engagement as a mediating variable (National Center for School Engagement 2009).

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TABLE A14 (CONTINUED)

Student School Engagement Survey (SSES)

Feature	Description
References	Finlay, K. A., and Heilbrunn, J. Z. (2006, January). *Re-engaging youth in school evaluation of model demonstration truancy programs* (Final evaluation report: Gulfton truancy reduction demonstration project, Houston, TX). Denver, CO: National Center for School Engagement, The Colorado Foundation for Families and Children. Retrieved November 10, 2009, from http://www.schoolengagement.org/TruancypreventionRegistry/Admin/Resources/Resources/FinalEvaluationReportGulftonTruancyReductionDemonstrationProjectHoustonTX.pdf. National Center for School Engagement. (2006a). *Quantifying school engagement: research report*. Retrieved November 11, 2009, from http://www.schoolengagement.org/TruancypreventionRegistry/Admin/Resources/Resources/QuantifyingSchoolEngagementResearchReport.pdf. National Center for School Engagement. (2006b). *Merrill middle school: school engagement and staff attendance efforts, school year 2005–2006*. Retrieved November 11, 2009, from http://www.schoolengagement.org/TruancypreventionRegistry/Admin/Resources/Resources/MerrillMiddleSchoolSchoolEngagementandStaffAttendanceEffortsforSchoolYear2005-2006.pdf. National Center for School Engagement. (2009). *Peer victimization in schools: a set of quantitative and qualitative studies of the connections among peer victimization, school engagement, truancy, school achievement, and other outcomes*. Retrieved November 11, 2009, from http://www.schoolengagement.org/TruancypreventionRegistry/Admin/Resources/Resources/PeerVictimizationinSchoolsAsetofQualitativeandQuantitativeStudies.pdf.

Source: Authors' compilation.

Teacher report instrument

TABLE A15

Reading Engagement Index (REI)

Feature	Description
Developer/website	Developed by Dr. Allan Wigfield and Dr. John Guthrie, University of Maryland (www.cori.umd.edu).
Availability/ key source	Items are described in Wigfield et al. (2008). Items and format are available by contacting Dr. Wigfield (aw44@umail.umd.edu).
Population	Instrument was used with sample of 492 grade 4 students and with sample of 31 grade 4 students in mid-Atlantic schools . The student samples were roughly 60–70 percent White, 20–28 percent Black, and 5–7 percent Hispanic.
Method	Teacher rating of each student's reading engagement.
Background	This teacher rating of the extent to which each a student is an engaged reader in the classroom was originally developed as an outcome measure for examining the effectiveness of a professional development intervention, Concept-Oriented Reading Instruction (CORI), designed by John Guthrie and colleagues to enhance students' reading engagement and increase reading comprehension (Guthrie, McRae, and Klauda 2007). Engagement was defined as having three dimensions (behavioral, emotional/ motivational, and cognitive). An engaged reader is assumed to be behaviorally active (reads frequently), internally motivated (likes to read), and cognitively active (uses strategies in reading). CORI teaches five instructional practices in reading that are "engagement supporting" to science or other content teachers (www.cori.umd.edu/what-is-cori/). It focuses primarily on upper elementary levels (grades 3–5). Guthrie et al. (2007a) summarize the results of 11 studies of the impact of CORI. In addition to reading comprehension scores, studies have examined the impact of CORI on other measures, including reading engagement of students as rated by teachers.
Administration	Administered by: Researchers/evaluators. Form: Paper and pencil questionnaire. Time: 20–30 minutes to rate all students in typical classroom. Training/instruction: Teachers should complete the ratings of their students in one sitting.
Language	English
What is measured	Instrument contains eight items intended to reflect the behavioral, motivational, and cognitive characteristics of engaged reading: • This student often reads independently. • This student reads favorite topics and authors. • This student is easily distracted in self-selected reading* (reverse scored). • This student works hard in reading.* • This student is a confident reader.* • This student uses comprehension strategies well.* • This student thinks deeply about the content of texts. • This student enjoys discussing books with peers. The authors have also used a shortened version of the instrument that includes the four items most correlated with students' self-reported motivation for reading as measured by the Wigfield and Guthrie (1997) Motivation for Reading Questionnaire (MRQ). These items are indicated above with an asterisk.
Scoring/reporting	Four-point response scale ranges from 1 (not true) to 4 (very true). Teacher's rating of each student's reading engagement on the items results in a total score of 8 to 32. If shortened four-item set is used, scores range from 4 to 16.

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TABLE A15 (CONTINUED)

Reading Engagement Index (REI)

Feature	Description
Reliability	Wigfield et al. (2008) report internal consistency (Cronbach's alpha) reliability on a sample of grade 4 students as .92; Cronbach's alpha for the four-item version of the scale was .89. Guthrie et al. (2007a) report reliabilities for a seven-item Reading Engagement Scale (REI) used in two prior studies of CORI impact as exceeding .93.
Validity	Wigfield et al. (2008) report that factor analysis indicates construct validity evidence supporting one factor. At individual student level, measure correlated positively with achievement as measured by both the Gates-MacGinitie measure and a text comprehension measure, thus establishing criterion-related validity. Guthrie et al. (2007b) show that teacher ratings of individual student reading engagement (on the REI) and student self-reports of motivation in reading (on the MRQ) are moderately correlated, a finding confirmed by Wigfield et al. (2008).
Use	Use of instrument has been cited in published research by the developers exploring the nature of reading engagement and motivation and the impact of the CORI intervention on reading engagement.
References	Guthrie, J. T., McRae, A., and Klauda, S. L. (2007a). Contributions of Concept-Oriented Reading Instruction to knowledge about interventions for motivations in reading. *Educational Psychologist, 42*(4), 237–250. Guthrie, J. T., Wagner, A. L., Wigfield, A., Tonaks, S. M., Humenick, N., and Littles, E. (2007b). Reading motivation and reading comprehension growth in the later elementary years. *Contemporary Educational Psychology, 32,* 282–313. Wigfield, A., and Guthrie, J. T. (1997). Relations of children's motivation for reading to the amount and breadth of their reading. *Journal of Educational Psychology, 89,* 420–432. Wigfield, A., Guthrie, J. T., Perencevich, K. C., Taboada, A., Klauda, S. L., McRae, A., and Barbosa, P. (2008). Role of reading engagement in mediating the effects of reading comprehension instruction on reading outcomes. *Psychology in the Schools, 45,* 432–445.

Source: Authors' compilation.

Observational instruments

TABLE A16

Behavioral Observation of Students in Schools (BOSS)

Feature	Description
Developer/website	Developed by Dr. Edward Shapiro, a school psychologist and the director of the Center for Promoting Research to Practice, Department of Education, Lehigh University (http://www.lehigh.edu/~ineduc/cprp/news_asha_manz_grants.html).
Availability/ key source	The manual containing all the directions and forms needed to conduct the observations is in Shapiro (2004). Data can also be collected using a personal digital assistant available for purchase at www.pearsonassessments.com. The complete package can be purchased for $87.40.
Population	Developed for use with prekindergarten–grade 12 students, the instrument has been used in studies with ethnically diverse group of both typically developing and special needs populations. Most published studies have examined use with elementary school–age students.
Method	Systematic direct observation of individual students.
Background	Instrument measures observed individual student's on-task/off-task behavior or academic engagement time, using momentary/time sampling procedure continuously over 15-second intervals to record two categories of engagement and three categories of nonengagement. For example, a student observed for 15 minutes would have roughly sixty 15-second intervals of recorded data. Observer codes four of every five 15-second intervals. Multiple observations for each student are needed. Observed categories are summed across observations. Measure was developed for use by school psychologists for screening children, especially those at risk of academic failure, and for school psychologists, researchers, and evaluators tracking effectiveness of interventions over time.
Administration	Administered by: Trained observer Form: Paper and pencil version or version that uses a personal digital assistant, which enables observers to record observed categories electronically, allowing for easier analysis Time: Guidelines recommend a minimum of three observations of 20–30 minutes each, which should be repeated over 2–3 days. It is important to collect enough data points to obtain an accurate picture of student behavior. Guidelines indicate that number of observations needed depends on purpose and variability in behavior of the student. In some cases, observations may be needed across different academic settings (group work, seat work, and so forth). Training/instructions: Detailed guidelines for conducting the observations are available in Shapiro (2004). According to developer, training can be conducted through practice in classroom or with videos; interobserver agreement of 80 percent or better on all categories can be reached after training.
Language	English
What is measured	Each 15-second interval is coded along five categories of engaged time (two categories of engagement and three categories of nonengagement). Engagement categories include active engagement, coded when the observed student is actively engaged in assigned work (reading aloud), and passive engagement, coded when the observed student is passively attending to assigned work (listening to a lecture). Nonengagement is coded for an observed interval when any of the following is observed: off-task motor (engaging in any out of seat behavior), off-task verbal (making unauthorized comments and remarks), or off-task passive (staring out the window). At every fifth 15-second observed interval, a randomly selected comparison student in the classroom is observed. In addition to five categories of observed student behavior, there is a category for entering information on teacher-directed instruction.
Scoring/reporting	Scores from observations are percentages of occurrences of the five categories across total number of 15-second intervals observed (percentage of intervals in which the category of engaged/nonengaged behaviors occurred). (See manual for full description of scoring.)
Reliability	In review of psychometric properties of the measure, Volpe et al. (2005) conclude that reports of interobserver reliability after training have been consistently high (90–100 percent). Using measure of academic engagement adapted from BOSS (on task/off task), Hintze and Mathews (2004) document high interobserver agreement (90 percent) but find that they could not achieve adequate reliability for some students until they observed them four times a day for four weeks.

(CONTINUED)

TABLE A16 (CONTINUED)

Behavioral Observation of Students in Schools (BOSS)

Feature	Description
Validity	Volpe et al. (2005) report limited evidence of validity. There is some evidence that measure can differentiate between children with attention deficit hyperactivity disorder (ADHD) and typically developing children (DuPaul et al. 2004; Vile Junod et al. 2006); differences between the two groups were greater in observed off-task categories than in on-task categories. Spanjers, Burns, and Wagner (2008) report a small positive correlation between an adapted measure of BOSS and a self-report measure of engagement but suggest that more research is needed on the relationship.
Use	School psychologists have used instrument to supplement individual student assessment procedures (Hintz and Matthews 2004; Volpe et al. 2005). Researchers have used it to evaluate the effectiveness of education interventions on particular (targeted) students (Mautone, DuPaul, and Jitendra 2005; McQuillan and DuPaul 1996) and to identify differences between the academic behavior of typically developing children and children with ADHD (DuPaul et al. 2004; Vile Junod et al. 2006).
References	Dupaul, G. J., Volpe, R. J., Jitendra, A. K., Lutz, J. G., Lorah, K. S., and Grubner, R. (2004). Elementary school students with attention-deficit disorder: predictors of academic achievement. *Journal of School Psychology, 42,* 285–301. Hintze, J., and Matthews, W. J. (2004). The generalizability of systematic direct observations across time and setting: a preliminary investigation of psychometrics of behavioral observation. *School Psychology Review, 33*(2), 258–270. Mautone, J. A., DuPaul, G. J., and Jitendra, A. K. (2005). The effects of computer-assisted instruction on the mathematics performance and classroom behavior of children with ADHD. *Journal of Attention Disorders, 9*(1), 301–312. McQuillan, K., and DuPaul, G. J. (1996). Classroom performance of students with serious emotional disturbance: a comparative study of evaluation methods for behavior management. *Journal of Emotional and Behavioral Disorders, 4*(3), 162–171. Shapiro, E. S. (2004). *Academic skills problems: direct assessment and intervention* (3rd ed.). New York: Guilford Press. Spanjers, D. M., Burns, M. K., and Wagner, A. R. (2008). Systematic direct observation of time on task as a measure of student engagement. *Assessment for Effective Intervention, 33*(2), 120–126. Vile Junod, R. E., Dupaul, G. J., Jitendra, A. S., Volpe, R. J., and Cleary, K. S. (2006). Classroom observations of students with and without ADHD: differences across types of engagement. *Journal of School Psychology, 44,* 87–104. Volpe, R. J., DiPerna, J. C., Hintze, J. M., and Shapiro, E. S. (2005). Observing students in classroom settings: a review of seven coding schemes. *School Psychology Review, 34*(4), 454–474.

Source: Authors' compilation.

TABLE A17
Classroom AIMS

Feature	Description
Developer/website	Developed by Alysia Roehrig while a graduate student at the University of Notre Dame. She is currently an assistant professor at the College of Education, Florida State University. (http://www.epls.fsu/edu/).
Availability/ key source	Copy of instrument can be obtained by contacting Dr. Roehrig at aroehrig@fsu.edu. For information on items, instrument development, reliability, and validity, see Roehrig and Christesen (forthcoming).
Population	Initially developed for use with elementary school teachers (K–2) with varying levels of teaching experience, the measure has been used by the developer and her colleagues with both beginning and experienced public and private school elementary school teachers in primarily middle class schools. Instrument was used in one published study with secondary teachers in English, math, and science in an economically depressed, urban district (Stanulis and Floden, 2009). Developer has used it with both economically depressed public schools and middle class, rural, public elementary and secondary schools.
Method	Classroom observation.
Background	Measure was developed as a comprehensive approach to evaluating multiple domains associated with effective teaching practices. Items were identified from analyses of teachers who were successful in maintaining high levels of student engagement and literacy gains. Initial focus was on teaching dimensions associated with literacy engagement and achievement, but developers indicate that the items may be applicable across content areas. The four engagement items are part of the larger AIMS observation instrument designed to quantify teacher quality (by assessing teachers' use of practices consistent with those of exemplary teachers). It is not clear whether the engagement items can be used independently of the whole set of AIMS items.
Administration	Administered by: Experienced observers/evaluators. Form: Observation form. Time: Administering the full observation is time intensive. Developer initially recommended that two people observe the classroom and take extensive field notes over several visits (Roehrig 2003). Across studies using this measure, the number and time of observations ranges from two to five visits a year, for one to four hours each visit. The two observers meet to discuss observation and ratings, consulting their field notes to resolve disagreements until they agree on the completion of the items. More recently, in 2010, developer indicates that observation can be conducted in 60–90 minutes (Roehrig and Christesen forthcoming). Training/instructions: No information on training observers was identified, although the developer indicates that training is important when using two observers.
Language	English
What is measured	Original version of instrument contained 130 items; most recent version includes 75, in three dimensions of classroom practices (atmosphere, instruction/content, management) and one dimension describing student engagement. Engagement is measured with four items, which focus on staying on task (at least 80 percent of students are consistently on task and highly engaged in class activities; students are so self-regulated that disciplinary encounters are rarely seen); participating in class (students eagerly raise their hands and participate); and expressing excitement (students vocalize/express excitement about content/ activities—lots of *oohs* and *aahs*).
Scoring/reporting	Engagement items are rated using scale ranging from 1 (poor/rare use) to 3 (exemplar/consistent use). The four categories can be reported individually or together. Developer provides interpretative guidelines for overall results: teachers who score more than one standard deviation below the mean are characterized as "poor," teachers who score over one standard deviation above the mean are characterized as "exemplar," and teachers who score within one standard deviation of the mean are characterized as "typical" (Roehrig 2003).
Reliability	Across samples analyzed by developer and her colleagues, Cronbach's alpha's for the student engagement scale ranged from .62 to .79. Across 125 teachers observed by two people (9,350 unique observations), the developers (Roehrig and Christesen forthcoming) report exact agreement on 58 percent; another 37 percent of ratings were off by only a point. In a study of secondary teachers, interrater reliability for individual items was 65 percent (Stanulis and Floden 2009), and internal consistency of scales was .60–.95. (It was not clear which statistics correspond to the student engagement scale.)

(CONTINUED)

TABLE A17 (CONTINUED)
Classroom AIMS

Feature	Description
Validity	Initially, both academic experts and effective elementary school teachers examined the content validity of the categories, subcategories, and items and rated the importance of each item for exemplary teaching. Some items were dropped from the instrument as a result. Roehrig (2003) reports evidence of construct validity of the engagement scale through significant correlations with the three other categories of teacher practice. Confirmatory factor analyses by Roehrig and Christesen (forthcoming) provide support for the four overarching categories.
Use	Most published research has been conducted by developer and her colleagues. The measure has been used for a variety of purposes, including comparing more and less effective teachers (Bohn et al. 2004); studying the impact of mentoring programs on improving teacher quality in ways that link to student engagement (Roehrig 2003; Stanulis and Floden 2009); guiding professional development (Roehrig, Bohn, et al. 2008); examining the alignment of teachers' beliefs and practices (Roehrig et al. 2009); and guiding teacher reflection (Roehrig, Guidry, et al. 2008).
References	Bohn, C. M., Roehrig, A. D., and Pressley, M. (2004). The first days of school in the classrooms of two more effective and four less effective primary-grade teachers. *The Elementary School Journal, 104*(4), 269–287. Pressley, M., Roehrig, A., Rapheal, L., Dolezal, S., Bohn, C., Mohan, L., Wharton-McDonald, R., Bogner, K., and Hogan, K. (2003). Teaching processes in elementary and secondary education. In W. M. Reynolds and G. E. Miller (Ed.), *Handbook of psychology, Vol. 7: educational psychology*. Hoboken, NJ: Wiley. Roehrig, A. D. (2003). *The effects of mentoring on beginning teacher effectiveness and student outcomes* (Doctoral dissertation, University of Norte Dame). *Dissertation Abstracts International,* 54, 1225A. Roehrig, A. D., Bohn, C. M., Turner, J. E., and Pressley, M. (2008). Mentoring beginning primary teachers for exemplary teaching practices. *Teaching and Teacher Education, 24,* 684–702. Roehrig, A. D., and Christesen, E. (Forthcoming). Development and use of a tool for evaluating teacher effectiveness in grades K–12. In V. Shute and B. Becker (Eds.), *Innovative assessment for the 21*st *century: Supporting educational needs.* New York: Springer. Roehrig, A. D., Guidry, L. O., Bodur, Y., Guan, Q., Guo, Y., and Pop, M. (2008). Guided field observations: variables related to preservice teachers' knowledge about effective primary reading instruction. *Literacy Research and Instruction, 47,* 76–98. Roehrig, A. D., Turner, J. E., Grove, C. M., Schneider, N., and Liu, A. (2009). Degree of alignment between beginning teachers' practices and beliefs about effective classroom practices. *The Teacher Educator, 44,* 164–187. Roehrig, A. D., Turner, J. E., and Petscher, Y. (2008). *Evaluation of the Florida Reading Initiative for the NorthEast Florida Education Consortium* (Tech. Rep. 1). Tallahassee, FL: Florida State University, Department of Educational Psychology and Learning Systems and the Florida Center for Reading Research. Stanulis, R. N., and Floden, R. E. (2009). Intensive mentoring as a way to help beginning teachers develop balanced instruction. *Journal of Teacher Education, 60,* 112–122.

Source: Authors' compilation.

TABLE A18

Code for Instructional Structure and Student Academic Response-Mainstream Version (MS-CISSAR) included in the Ecobehavioral Assessment Systems Software (EBASS)

Feature	Description
Developer/website	Developed by Dr. Charles Greenwood and colleagues at the University of Kansas. Dr. Greenwood is the Director of the Juniper Gardens Children's Project at the University of Kansas (http://www.jgcp.ku.edu/~jgcp/products/EBASS/index.htm).
Availability/ key source	EBASS version 3.0 software, site licenses, manuals, and training videos are available for purchase at www.jgcp.ku.edu/~jgcp/products/EBASS/ebass_materials.htm. The EBASS software package, including two distribution disks, practitioner's manual, and technical manual, costs $350. A summary of the development and validation for the EBASS is found in Greenwood et al. (1994). A new EBASS mobile system and website are being designed.
Population	Developed and validated for use with both elementary and middle school students (Greenwood et al. 1994), the instrument is relevant for observing students in both regular and special education classes. It has also been used to observe high school students (Wallace et al. 2002).
Method	Systematic direct observational measure of individual students in the classroom context.
Background	Instrument reflects program of research begun in 1981 to develop a better understanding of how student academic responding interacts with teacher behavior and classroom settings (Stanley and Greenwood 1981, 1983). Original observational coding system (CISSAR) used 53 categories, defined in training manual and computer-assisted tutorial. The MS-CISSAR is an expanded version of the original observation categories, with event definitions organized into three categories. Student behavior (one of the three categories) focuses on the construct of engagement in terms of the observed student's "academic responding," considered a critical enabler of academic success and thus an important area for data collection (Greenwood, Horton, and Utley 2002). EBASS software was developed to make collection and analysis of observation data easier to input and analyze. Primary purpose of instrument is to collect classroom observation data on specific students for use by practitioners (for example, school psychologists) in improving instruction and results for students. It has also been used by researchers and program evaluators looking for an observational measure of student engagement.
Administration	Administered by: Trained observers working in the classroom using EBASS software. Momentary time sampling procedures used to prompt recording of observations. Onset of 20-second intervals is signaled by auditory bleep and event table on computer screen. Observers record events by typing their selection of the event names from the table (Greenwood et al. 1991). Time: Length of time of observation is driven by the need to adequately sample the situation in question. Training/instructions: Use of instrument requires training in applying the observation categories, offered by developer and through videotapes and other self-practice materials.
Language	English
What is measured	MS-CISSAR contains a 105-event taxonomy for recording observations. Taxonomy organizes events by student behavior, teacher behavior, and ecological setting. Under student behavior, observations are coded in terms of positive, neutral, or negative aspects of academic engagement, as follows: • Academic responding subcategory (positive engagement behaviors) is coded when student is observed engaged in work such as writing, playing an academic game, asking or answering an academic question, or reading (aloud or silently). • Task management subcategory (neutral engagement) is coded when student is observed in such behaviors as raising a hand to signal for help or looking for materials. • Inappropriate behavior/competing behavior subcategory includes undesired, inappropriate behaviors, such as being disruptive, talking inappropriately, or not paying attention.
Scoring/reporting	EBASS software program, which observers use to record their data, provides analytical tools for summarizing and displaying observation results. It can analyze data for individual students, individual observations, and pooled observations. Engagement analysis module shows plots across time (for example, student's observed academic responding percentage throughout the minutes of a school day).

(CONTINUED)

TABLE A18 (CONTINUED)

Code for Instructional Structure and Student Academic Response-Mainstream Version (MS-CISSAR) included in the Ecobehavioral Assessment Systems Software (EBASS)

Feature	Description
Reliability	Greenwood et al. (1994) note that EBASS training materials were developed so that event definitions could be learned through drill and practice tutorials and that videotapes could be used for calibration (observers can evaluate percentage agreement against standards). Wallace et al. (2002) report observer agreement with the calibration video of 85–92 percent. In addition to evidence that observers can learn to calibrate against the standards, studies have reported interobserver agreements at acceptable levels after training (80 percent or higher in Rotholz, Kamps, and Greenwood [1989]; 80–90 percent in Kamps et al. [2008]; mean of 97 percent in Greenwood et al. [2002]).
Validity	Greenwood et al. (1994) and Greenwood et al. (2002) find evidence of criterion-related validity in that academic responding is positively correlated with academic achievement and mediates the effects of instruction on achievement.
Use	In addition to practical use of EBASS/MS-CISSAR by school psychologists to gather data on individual students' behaviors for clinical assessments, Greenwood et al. (2002) report that data on student engagement in academic responding have been used as outcome measure in studying alternative instructional approaches to reading, identifying classroom situations that promote engagement with students with disabilities, and examining engagement in high school classrooms recognized for inclusive practices.
References	Greenwood, C. R., Carta, J., and Atwater, J. (1991). Ecobehavioral analysis in the classroom: review and implications. *Journal of Behavioral Education*, *1*(1), 59–77. Greenwood, C. R., Carta, J. J., Kamps, D., and Delquadri, J. (1997). *EcoBehavioral Assessment Systems Software (EBASS): practitioner's manual, version 3.0*. Kansas City: University of Kansas, Juniper Gardens Children's Project, Shiefelbusch Institute for Life Span Studies. Greenwood, C. R., Carta, J., Kamps, D., Terry, B., and Delquadri, J. (1994). Development and validation of standard observation systems for school practitioners: Ecobehavorial Assessment Systems Software (EBASS). *Exceptional Children, 61,* 197–210. Greenwood, C. R., and Delquadri, J. (1988). Code for instructional structure and student academic response: CISSAR. In M. Hersen and A.S. Bellack (Eds.), *Dictionary of behavioral assessment techniques*. New York: Pergamon. Greenwood, C. R., Horton, B. T., and Utley, C. A. (2002). Academic engagement: current perspectives on research and practice. *School Psychology Review, 31,* 328–349. Greenwood, C. R., Terry, B., Marquis, J., and Walker, D. (1994). Confirming a performance-based instructional model. *School Psychology Review, 23*(4), 652–668. Kamps, D., Greenwood, C., Arreaga-Mayer, C., Veerkamp, M., Utley, C., Tapia, Y., Bowman-Perrott, L., and Bannister, H. (2008). The efficacy of class wide peer tutoring in middle schools. *Education and Treatment of Children, 31*(2), 119–152. Rothloz, D., Kamps, D., and Greenwood, C. R. (1989). Ecobehavioral assessment in special education settings: applications with autistic and developmentally disabled students. *Journal of Special Education, 23*, 59–81. Stanley, S. O., and Greenwood, C. R. (1981). *Code for Instructional Structure and Student Academic Response (CISSAR): observer's manual*. Kansas City: University of Kansas, Juniper Garden's Children's Project, Bureau of Child Research. Stanley, S. O., and Greenwood, C. R. (1983). Assessing opportunity to responds in classroom environments: How much opportunity to respond does the minority disadvantaged student receive in school? *Exceptional Children, 49*, 370–373. Wallace, T., Anderson, A., Bartholomay, T., and Hupp, S. (2002). An ecobehavioral examination of high school classrooms that include students with disabilities. *Exceptional Children, 68*(3), 345–359.

Source: Authors' compilation.

TABLE A19
Instructional Practices Inventory (IPI)

Feature	Description
Developer/website	Developed by Bryan Painter (1998) and Dr. Jerry Valentine, director of the Middle Level Leadership Center at the University of Missouri (http://www.education.missouri.edu/orgs/mllc).
Availability/ key source	Information about development and use of instrument (and future workshop locations for potential users) can be obtained by contacting Dr. Valentine (ValentineJ@missouri.edu). A new website devoted to disseminating information about the instrument (www. instructionalpracticesinventory.com) is under construction.
Population	First used in 1996 in eight elementary schools, eight middle schools, and eight high schools, the instrument was later used in preschools; vocational, technical, and career schools; and alternative schools in urban, suburban, and rural settings.
Method	Observation of classrooms (to be aggregated at the school level).
Background	Revised several times as new evidence and insights emerged (Quinn 2002; Valentine 2005; Valentine 2007a), the instrument now uses a six-category rubric measuring the extent of student-engaged learning in a school. Process was developed as part of university-based school improvement project called Project ASSIST (described at www.mllc.org). Instrument was designed to produce a schoolwide picture of student-engaged learning that could serve as basis for faculty reflection and instructional change. Project ASSIST provided original context for development; instrument has since been used by hundreds of schools not associated with Project ASSIST. Intended for use by schools interested in gathering formative data about the extent of student-engaged learning as a basis for school improvement conversations (not for teacher evaluation or providing feedback to individual teachers).
Administration	Administered by: Trained data collectors in classrooms. Form: Observation. Time: Observations, usually taking three minutes, in all 100–120 classrooms in a typical school, are conducted in a single day. Schools may collect and discuss data three or four times a year. Training/instructions: Developer supports use of instrument only by people trained by certified trainers at one-day workshops, provided throughout the United States each year. IPI level 1 workshops focus on building capacity to collect valid, reliable data and capacity and to study the data collected. Recommended data collectors are teacher leaders in the school. As process is not linked to evaluation or supervision, school administrators are not viewed as appropriate data collectors.
What is measured	Observational categories were developed to describe broad range of engaged learning. "Student-engaged instruction" contains two coding categories that describe the type of learning students are experiencing (for example, project work, cooperative learning, small group discussions, and whole group discussions in which higher-order/deeper thinking is occurring among the majority of students). "Teacher-directed instruction" is coded when lectures, explanations by the teacher, worksheets, skill practice, or seat work are observed. "Disengagement" is coded as student or teacher disengagement.
Scoring/reporting	Observations are coded as one of the six types of teacher-student instructional engagement. Data analysis yields observation percentages for each of the six engagement levels. "Core" class and "noncore" class are profiled separately and together. Protocols for faculty discussion of the data are provided to enable reflection. Data from typical, exceptional, and struggling schools are available to give users a frame of reference against which to compare their schools' performance.
Reliability	Minimum rater reliability for the developer to endorse the use of the tool is .80 for site-based school improvement use and .90 for research use (Valentine 2007a). Developer offers workshops to train observers to reach the necessary.80 accuracy level. Observers who used only the website and other materials to learn the six coding categories had mean rater reliability scores of less than .20, compared with mean reliability scores of more than .90 by participants following workshop training (Valentine et al. 2006).
Validity	Valentine (2007b) finds significant differences between highly successful and unsuccessful middle schools: 29.3 percent of observations in highly successful schools fell into the "student active engaged learning" category, for example, versus 16.0 percent in unsuccessful schools. Quinn (2002) reports that in a sample of 24 schools teacher-rated principal leadership behaviors correlate positively with total IPI scores.

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TABLE A19 (CONTINUED)
Instructional Practices Inventory (IPI)

Feature	Description
Use	Primary use has been in school improvement processes. Developers report that 10,000 educators from hundreds of schools have been trained to use the IPI. Several recent dissertations (Gauen 2009; Collins 2009) study implementation integrity and impact of use. Using a case study approach to explore the impact of the two-year use of IPI in an Illinois middle school, Gauen (2009) finds positive impacts. Using hierarchical linear modeling, Collins (2009) finds significant relationships between the integrity with which schools implemented the IPI collaborative processes and higher-order engagement and student achievement. Valentine and Collins (2009a,b) report that schools with high levels of implementation integrity and high levels of poverty have higher achievement gains than otherwise similar schools.
References	Collins, J. A. (2009). *Higher-order thinking in the high-stakes accountability era: Linking student engagement and test performance*. (Unpublished doctoral dissertation). University of Missouri, Columbia, MO. Gauen, K. E. (2009). *The impact of the instructional practices inventory at an Illinois middle school*. (Unpublished doctoral dissertation). Lindenwood University., St. Charles, MO. Painter, B. A. (1998). *The impact of school leadership on student engagement and perceptions of teacher-student relationships*. (Unpublished doctoral dissertation). University of Missouri, Columbia, MO. Quinn, D. M. (2002). The impact of principal leadership behaviors on instructional practice and student engagement. *Journal of Educational Administration, 40*(5), 447–467. Valentine, J. W. (2005). *The Instructional Practices Inventory: a process for profiling student engaged learning for school improvement*. Columbia, MO: University of Missouri, Middle Level Leadership Center. Retrieved October 1, 2009, from http://education.missouri.edu/orgs/mllc/Upload%20Area-Docs/NASSP%202008-IPI%20Manuscript.pdf. Valentine, J. W. (2007a). *Instructional practices inventory: observer reliability workshop manual*. Retrieved October 1, 2009, from http://www.mllc.org. Valentine, J. W. (2007b). *The Instructional Practices Inventory: using a student learning assessment to foster organizational learning*. Columbia, MO: University of Missouri, Middle Level Leadership Center. Retrieved October 1, 2009, from http://education.missouri.edu/orgs/mllc/Upload%20Area-Docs/IPI%20Manuscript%2012-07.pdf. Valentine, J. W., and Collins, J. A. (2009a, March) *Improving instruction by profiling student engaged learning and creating collaborative teacher learning conversations*. Concurrent session at the meeting of the National Association of Secondary School Principals, San Diego, CA. Valentine, J. W., and Collins, J. A. (2009b, April) *Analyzing the relationships among the instructional practices inventory, school culture and climate, and organizational leadership*. Paper presented at the meeting of the American Educational Research Association, San Diego, CA. Valentine, J. W., Solomon, B., Matthews, K., and Mees, G. (2006, November). *Profiling instructional practices—data for improving instruction, achievement, and school culture*. Concurrent session at the meeting of the National Middle School Association, Nashville, TN.

Source: Authors' compilation.

APPENDIX B METHODOLOGY

This appendix describes the methodology used to search and screen for relevant instruments and then find and summarize information on the 21 instruments that were identified. It explains how the instrument-documentation protocols were created and used and how the instrument abstracts that appear in appendix A were prepared.

Executing the search

To identify student engagement instruments, researchers first searched three databases: Academic Search Premier, PsycINFO, and ERIC. All search combinations used the word "engagement." The search was restricted to studies available in English and published between January 1979 and May 2009. The year 1979 was selected to predate the earliest emergence of engagement studies in the early 1980s.

Database/keyword searches were completed and tracked in a set order, as shown in table B1. For example, the first search was of the Academic Search Premier database, using "student engagement," "school engagement," and "measur*" as search terms. The second search was of the PsycINFO database and used the same keywords. The same procedure was then followed for ERIC. The search terms were then changed slightly (using "instrument" instead of "measur*") and reported for the same three databases.

The number of references identified per keyword search (each row in the table) is reported in the column titled "total number of references identified." The next column shows the number of unique references added by each search (row). The total

TABLE B1
Database search results

Search terms/database	Number of references identified	Number of unique references identified
"student engagement" or "school engagement" and "survey"		
Academic Search Premier	258	183
PsycINFO	136	65
ERIC	292	144
"student engagement" or "school engagement" and "assess*"		
Academic Search Premier	144	59
PsycINFO	188	69
ERIC	286	95
"student engagement" or "school engagement" and "measur*"		
Academic Search Premier	112	112
PsycINFO	191	163
ERIC	189	146
"academic engagement" and "measur*" or "instrument" or "questionnaire" or "survey" or "assess*" or "scale"		
Academic Search Premier	50	29
PsycINFO	102	54
ERIC	68	27
"student engagement" or "school engagement" and "questionnaire"		
Academic Search Premier	18	11
PsycINFO	61	32
ERIC	63	26

(CONTINUED)

TABLE B1 (CONTINUED)
Database search results

Search terms/database	Number of references identified	Number of unique references identified
"student engagement" or "school engagement" and "scale"		
Academic Search Premier	18	3
PsycINFO	56	9
ERIC	45	6
"student engagement" or "school engagement" and "instrument"		
Academic Search Premier	17	7
PsycINFO	41	20
ERIC	46	22
"science engagement" and "measur*" or "instrument" or "questionnaire" or "survey" or "assess*" or "scale"		
Academic Search Premier, PsycINFO, and ERIC (searched concurrently)	5	2
"math* engagement" and "measur*" or "instrument" or "questionnaire" or "survey" or "assess*" or "scale"		
Academic Search Premier, PsycINFO, and ERIC (searched concurrently)	1	1
"language arts engagement" and "measur*" or "instrument" or "questionnaire" or "survey" or "assess*" or "scale"		
Academic Search Premier, PsycINFO, and ERIC (searched concurrently)	1	1
"reading engagement" and "measur*" or "instrument" or "questionnaire" or "survey" or "assess*" or "scale"		
Academic Search Premier, PsycINFO, and ERIC (searched concurrently)	32	28
Total	2,420	1,314

Note: Search engine used was EBSCOhost.

Source: Authors.

number of nonduplicated citations identified from the various search term combinations was 1,314.

Screening citations and identifying potential instruments for inclusion

A database of all 1,314 citations (including fields for author, title, and abstract) was created to track the citations during screening. The next steps involved screening the citations for potential instruments and reviewing the resulting instruments for inclusion/exclusion.

Screening citations for potential instruments

Piloting and training for the citation screening process. The project team initially developed a process for screening the 1,314 citations/abstracts using a sample set of 25 citations/abstracts. It jointly reviewed the 25 and developed possible coding categories to track the citation screening results. It then examined each citation/abstract to determine whether it was on or off topic and, if on topic, whether it mentioned an instrument. Some citations/abstracts contained a "named" measure or instrument, which could be identified easily; others referenced a measure but did not name it. The project team made a decision regarding obtaining the full article. In cases in which an instrument was mentioned but not named in the abstract, the project team obtained the full article to determine the status of the measure. The team reviewed a second set of 40 citations/abstracts to develop a common understanding of the decision rules in the citation screening process. A database format was developed to track the reviews of each citation/abstract.

The project team then reviewed a third set of 25 citations/abstracts. This time each team member coded the same citations/abstracts individually. Coding differences were then discussed, and a

common understanding of decision rules was agreed upon (for example, err in the direction of inclusion of the citation as on topic if there was any question).

The last step involved each project team member individually reviewing and coding another set of 20 citations/abstracts. For citations/abstracts on which coders were not in total agreement, group discussions of the reasoning led to consensus. Written directions for use of the database reflecting the agreed upon process were finalized. The database form included a reference number for each citation and four columns (not shown in table B2) taken directly from the search results (author, title, periodical, year). A column for insertion of the citation abstract was also included. Then, as shown in table B2, it also included columns for the citation screener to complete based on information in the abstract, or if needed, from a review of the retrieved full article. The content area (math, science, and so forth) was entered only for on-topic citations.

Five project staff conducted the screening process for the 1,314 citations. These staff included one student of Dr. Fredricks, supervised by Dr. Fredricks, and four Regional Educational Laboratory Southeast research staff members (two with Ph.D.s in educational research/evaluation and two with master's degrees in educational research). To ensure a common understanding, each citation screener first screened a new set of 50 citations and entered the information into the database. The 50 database entries from each screener were reviewed with the principal investigators to address any discrepancies in completing the database field. This group check represented the final screening training. The screeners then reviewed their portion of the citations, bringing questions to the principal investigators as they arose.

After screening, a second staff member checked about half (578) of the screened citations for accuracy. That is, these coded citations/abstracts were checked by reassigning the sample of 578 to different screeners. The "checker" examined the database entries for each citation. If the checker was unable to agree with the original screener on the database entries on the citation, the citation was brought to the team for resolution. For the sampled citations checked, 548 (95 percent) had no discrepancies between the screener and checker. The 30 discrepancies were discussed and resolved as shown below:

- Citation coding changed from off topic to on topic: 12.
- Citation coding changed from on topic to off topic: 13.
- Named instrument identified that was not named in original coding: 2.
- Discussion but coding not changed: 3.

The main purpose in screening citations was to identify instruments mentioned or used. Of the

TABLE B2
Database form used to track instruments identified

Reference number	Abstract	On topic/ off topic	Instrument identified	Instrument name	Retrieve article?	Content area	Comments

TABLE B3
Number and percentage of screened citations

Type of citation	Number	Percent
All citations (*n* = 1,314)		
On topic	788	60.0
Off topic	526	40.0
Named instrument identified	475	36.1
On-topic citations (*n* = 788)		
General engagement/not subject specific	695	88.2
Language arts/reading	41	5.2
Math	11	1.4
Multiple subjects	15	1.9
Science	26	3.3

Source: Authors.

1,314 citations identified from keyword searches, 40 percent were coded as off topic; 36 percent contained a named instrument (table B3). Very few on-topic citations dealt with subject-specific engagement. Most citations coded as on topic dealt with general student or school engagement (88 percent).

The search/screening process yielded 144 unique instrument names (figure B1). Twelve other instrument names were added to the list through informal supplemental processes (other contacts or work under way by the principal investigators on this topic, scans of references of various articles examined, and so forth). As a result, 156 instruments were identified for possible inclusion in the study.

Reviewing resulting instruments for inclusion/exclusion. The project team reviewed the 156 instruments for relevance. Criteria for exclusion were developed through team meetings during which relevant citations/abstracts (or full articles, if retrieved) on the 156 instruments were reviewed.

The exclusion criteria excluded all but 19 instrument names in the next phase of the study. Subsequent examination revealed that two of the named instruments (RAPS and the EvsD) included two measures of engagement (one a student self-report measure and one a teacher report on individual student engagement). Thus, the number of instrument abstracts in appendix A is 19, but the total number of instruments shown in figure B1 is 21 (14 student self-report, 3 teacher report, and 4 observational measures).

Instruments were excluded for the following reasons:

1. The instrument was developed for students outside the age range for this study (that is, preschool, kindergarten, early elementary, or college).

2. The instrument was developed and used specifically with special education populations.

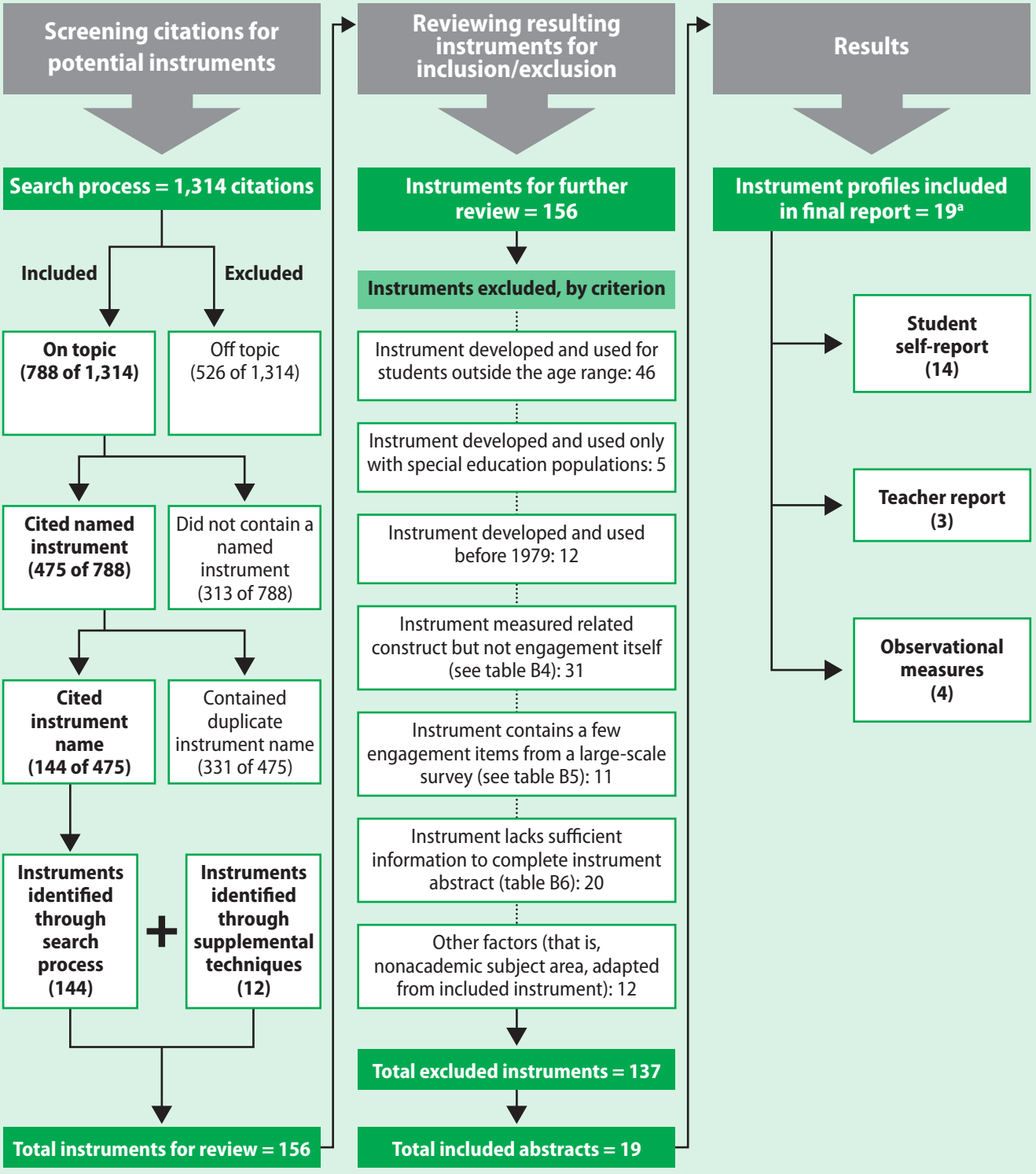
3. The instrument was developed before 1979, and little to no use of the instrument was documented between 1979 and 2009.

4. The instrument measures a construct related to engagement (for example, school climate, school bonding, self-efficacy) but has not been referred to or used as a measure of engagement in subsequent studies (table B4).

5. The instrument was used as part of a large-scale survey in which there were only a few engagement items—not used as a scale—and engagement was not the main focus of the study (table B5). Eleven large-scale surveys were excluded because the engagement-related items were difficult to access. This occurred for various reasons: items are scattered throughout the larger survey instrument and not identified as an engagement scale; subsequent researchers analyzed the survey data in secondary analyses by combining engagement items from the survey in different ways; and there is limited descriptive information of the engagement items apart from the larger survey. Seven survey instruments contain a parent report and focus on family topics. Examining these large-scale studies may yield useful engagement items scattered throughout the instruments, but the items are not grouped into an engagement scale.

FIGURE B1

Processes for screening citations and reviewing instruments for inclusion/exclusion



a. Two of the 19 instrument profiles included in appendix A contain both a student self-report and a teacher rating component. They are counted in both categories here.

Source: Authors.

TABLE B4
Instruments excluded because focus is not on engagement

Construct measured	Instrument	References identified in search
Attitudes toward school	Positive Orientation to School	Jessor et al. (1995)
	School Attitude Measures (SAM)	Dolan (1983)
Burnout	School Burnout Inventory (SBI)	Salmela-Aro et al. (2009)
Classroom as community	Rovai Classroom Community Scale (CCS)	Lear (2008)
Classroom/learning environment	Classroom Environment Scale	Tobin and Fraser (1990)
	System for Teaching and Learning Assessment and Review (STAR)	Claudet and Ellett (1990); Heroman (1990)
Connection to school	School Connection	Brown and Evans (2002)
Effectiveness of instruction	Diagnostic Classroom Observation (DCO)	Saginor (2008)
Flow	Flow Activities Assessment	Whalen (1997)
	Flow State Scale	Fullagar and Mills (2008)
Goal orientation	Goal Orientation and Learning Strategies Survey (GOALS-S)	Dowson and McInerney (1997)
	Patterns of Adaptive Learning Scale (PALS)	Karam (2006); Lippman and Rivers (2008); Maehr and Midgley (1996)
Locus of control, attendance	The Academic Ethic	Pino and Smith (2004)
Metacognition	Metacognitive Questionnaire (MQ)	Howard-Rose and Winne (1993)
Motivation for reading	Motivations for Reading Questionnaire (MRQ)	Wigfield and Guthrie (1997)
Parent involvement	Perception of Parent Involvement	Abd-El-Fattah (2006)
Policies related to dropping out	School Practices and Policies Assessment Worksheet and Family Practices and Policies Assessment Worksheet	Christenson (1995)
Rating of behavioral problems	Teacher-Child Rating Scale	Luthar and Ansary (2005)
School bonding	School Bonding	Jenkins (1997)
	School Bonding	Hawkins, Battin-Pearson, and Abbott (2001)
	School Bonding Questionnaire	Hudson (1999)
School climate	School Climate	Simons-Morton and Crump (2002)
	School Climate Questionnaire	Blackadar and Nachtigal (1986)
School membership	Psychological Sense of School Membership (PSSM)	Goodenow (1992); Shochet et al. (2006); Shochet et al. (2008); Voelkl (1996)
Self-concept	Children's Self-Concept Scale	Hodges and Wolf (1997)
Self-efficacy	Science Self-Efficacy Questionnaire (SSEQ)	Miller (2006)
Self-regulated learning	Self-Regulated Learning Rating Scale (SRL)	Howard-Rose and Winne (1993)
Social competence	Social Competence Scale	Hughes and Zhang (2007); Luo et al. (2009)
	Social Skills Rating System	Sinclair et al. (1998)
Strategy use	Learning Process Questionnaire	Ainley (1993)
Time perspective	Time Perspective	Horstmanshof and Zimitat (2007)

Source: Authors' compilation.

TABLE B5

Instruments excluded because part of a large-scale survey

Instrument/study	Population	Method	Website
California Healthy Kids Survey	Students in grades 5–12 in California	Paper and pencil student self-report questionnaire	www.californiahealthykids.org www.wested.org/hks/
Educational Longitudinal Study (ELS)	Students in grade 10 through early adulthood	Paper and pencil student self-report questionnaire; teacher and parent report questionnaires; follow-up student self-report conducted by web, telephone interview, or computer-assisted personal interview	nces.ed.gov/surveys/ELS2002/
Longitudinal Surveys of Australian Youth (LSAY)	Students age 15 through early adulthood in Australia	Student self-report conducted by telephone interview	www.lsay.edu.au/
Minnesota Twin Family Study (MTFS)	Twins age 11 through adulthood and their parents	Face-to-face interviews with twins and parents; physiological exams	mctfr.psych.umn.edu/twinstudy/
National Education Longitudinal Study (NELS)	Students in grade 8 through early adulthood	Paper and pencil student self-report questionnaire; teacher and parent report questionnaires; follow-up student self-report conducted by telephone interview or computer-assisted personal interview	nces.ed.gov/surveys/NELS88/
National Longitudinal Survey of Children and Youth (NLSCY)	Canadians from birth through early adulthood	Parent reports conducted by computer-assisted personal interview (ages 0–17); student self-reports conducted by computer-assisted personal interview (ages 16 and older); paper and pencil student self-report questionnaire (ages 12–17); cognitive tests	www.statcan.gc.ca/imdb-bmdi/4450-eng.htm
National Survey of America's Families (NSAF)	Families across 13 states	Parent reports conducted by in-person interviews and telephone interviews	urban.org/center/anf/nsaf.cfm
National Survey of Child and Adolescent Well-Being (NSCAW)	Families that enter child welfare system with children ages 0–14	Teacher report questionnaires	www.acf.hhs.gov/programs/opre/abuse_neglect/nscaw/
National Survey of Children's Health (NSCH)	Households with children ages 0–17	Parent reports conducted by telephone interview	www.nschdata.org
Philadelphia Educational Longitudinal Study (PELS)	Students in grade 8 through early adulthood	Student self-reports and parent reports conducted by telephone interview	www.philaedfund.org/research/research-studies/philadelphia-educational-longitudinal-study-pels
Third International Mathematics and Science Study (TIMSS)	Students in grades 4–8	Paper and pencil student self-report questionnaire; teacher and administrator report questionnaires; mathematics and science assessments	http://nces.ed.gov/timss/

Source: Authors' compilation.

6. There was not enough information on the instrument to complete an instrument abstract (only one reference was cited, insufficient descriptive information was provided, items were difficult to find; table B6). Twenty instruments were excluded because of inadequate information, 17 of them because they were cited only once in the original search. Of these 17, a follow-up web search for additional information was conducted for instruments whose names suggested that they would be relevant for inclusion. The follow-up search was performed using the name of the instrument and author cited before concluding that there were no additional citations other than those listed. For the three instruments in table B6 with multiple references, explanations for their exclusion are provided in the table notes.

7. Measure was developed for use in non-academic subject areas (such as physical education) or adapted from an instrument already included (duplication).

TABLE B6
Instruments excluded because of inadequate information

Instrument excluded/reason for exclusion	References identified in search
Inadequate information	
Academic Engaged Time (AET)[a]	Walker and others (1993)
Adolescent Family and Social Life Questionnaire	Lin and others (2008)
Association of Mothers' Report of Family Management Practices	Taylor and Lopez (2005)
Check and Connect Monitoring Sheet	Anderson and others (2004)
Engagement Check II (adapted from Planned Activity Check- PLAC)[a]	Ridley and McWilliam (2001)
Engagement in School—Teacher Rating Scale[a]	Anderson and others (2004)
Engaging Behavior Checklist[a]	Beuscher and others (1997)
KIDS COUNT report	Farber and Burgess (2002)
School and Social Experiences Questionnaire (SSEQ) Subscale	Singh, Chang, and Dika (2007)
School Transition Study (STS)	Hauser-Cram and others (2006)
Secondary Student Opinion Survey	Sinclair and others (1998)
Student Engagement in the Mathematics Classroom Scale[a]	Kong, Wong, and Lam (2003)
Student Engagement Questionnaire[a]	Marks (2000)
Student Engagement Rating Instrument-Anderson Method[a]	Kumar (1991)
Tell Them From Me Survey	Willms and Flanagan (2007)
Transaction in Science (TIS)	Kumar (1991)
Youth Risk Behavior Survey	Carter, McGee, Taylor, and Williams (2007)
Other reason	
Perceived Academic Engagement Scale (PAES)[b]	Chen (2005, 2008); Jeon (2008)
Student Engagement and Family Culture Survey[c]	Leithwood and Jantzi (1998, 1999a, 1999b, 1999c, 2000)
Utrecht Work Engagement Scale for Students (UWES-S)[d]	Gan et al. (2007); Kiuru et al. (2009); Schaufeli et al. (2002); Wefald and Downey (2009); Zhang, Gan, and Cham (2007)

a. A follow-up web search for additional information was conducted because the instrument's name suggested that it would be relevant for inclusion. None was found.

b. Instrument appears to have been validated only in a language other than English.

c. Multiple iterations of scale items were difficult to describe.

d. Original scale was developed for use in the workplace and revised for students; information describing use with targeted age group was not available.

Source: Authors' compilation.

Organizing citations by instrument and searching for additional information

For each of the 19 instrument names identified for inclusion, a reference list was created using the relevant citations identified in the search process. The next step involved collecting enough additional information on each instrument to describe it. The project team developed a systematic process for gathering basic information about each instrument. The goal was not to conduct an exhaustive search on each instrument but to find key manuals or other articles describing the development, features, and psychometric properties of the measure and to gather enough information to develop an instrument abstract.

The searches were conducted by the five members of the research team that screened the citations using a common checklist. This search used EBSCOhost (an academic search engine) to search three databases (Academic Search Premier, PsycINFO, and ERIC) on each instrument name, instrument abbreviation, and author name. The citations were reviewed by the research team member conducting the search who made sure that relevant references not already identified were added to the reference list for the instrument. The team member also completed a web search to identify key websites for each instrument. As a result of the additional searching, a folder for each instrument was compiled including the following data:

- Instrument fact sheet (name, developer, contact information, website).
- Copy of instrument.
- Copy of instrument manual or key article describing its development.
- Copies of articles on reference list generated.
- Copies of web-based information specific to the instrument.

The instrument reference lists are included in the references of this report.

Completing the instrument-documentation protocols and creating the instrument abstracts

The principal investigators and project team created the instrument-documentation protocol to pull common categories of information on each instrument from the various sources in the folders and share the results with the team. To learn how to complete the protocol, the project team completed instrument-documentation protocols on three separate instruments. Working through the completion of these three protocols together with the principal investigators led to the development of the directions and definitions shown in table B7. Project team members then completed the instrument-documentation protocols on two instruments assigned to them as a practice run. Together the principal investigators and team reviewed the completed protocol and provided feedback. The remaining protocols were then assigned to five team members.

Completed protocols were used to create shorter instrument abstracts. The final set of categories used in the instrument abstracts included in appendix A evolved over several team meetings, during which the team compared first drafts by team members and developed a common understanding of what information belonged in each category (row) of the abstracts. Three levels of review were conducted to ensure accuracy across the 19 abstracts:

1. Each abstract was reviewed by a second team member against the materials in the instrument folder, including the completed instrument-documentation protocol and copies of articles, noting any questions or inconsistencies, which were then used to revise the description.
2. The entire set of abstracts was reviewed by the two principal investigators (with the instrument folders of materials available) for accuracy, clarity, common language, and common levels of information.
3. After the principal investigators reviewed and finalized the abstracts, the abstracts were sent

to the developers for review. The developers were informed of the purpose of the study and asked to review the abstract for accuracy. Of the 19 abstracts in appendix A, 18 were reviewed by the developer. Four developers made no changes to the information; 14 provided additional references or updates to the instrument information. The developers of the MSLQ were contacted twice but did not respond.

Once the instrument abstracts were complete, analysis involved summarizing the numbers and kinds of instruments identified and examining information useful to practitioners and evaluators/researchers. The principal investigators worked together to review information provided in all instrument abstracts and draft the findings.

TABLE B7

Instrument-documentation protocol

Is the instrument manual available?

☐ Yes ☐ No

Information domain		Directions
1.	Instrument name	Provide the actual instrument name.
2.	Instrument description	Provide a brief, several sentence overview description of the instrument named above. For example, number of items, all subscales (indicate which subscale we are interested in if engagement is only a piece of larger instrument), and format of instrument (for example, student self-report, teacher observation) The description should answer the question—what is it? Cite the source for the descriptive information.
3.	Publisher/developer and website (if applicable) or citation	Provide publisher, developer, or author contact information. Include information on website or other address for obtaining or purchasing the measure. If measure is only available in a published article, cite the article.
4.	Development context/history	This should be a summary of what is known about the development context/research history for the instrument. For example, was it developed as part of a research project or was it developed for use in improving teacher quality, or to provide more insight into student perspectives on school? Provide the timeline for the instrument as you can infer it from various sources (initially developed in…., revised in…, changed from … to … over time, and so forth). If it was initially developed for research applications and then moved into school reform/practical applications or if it was initially developed at the college level and then moved into K–12, those kinds of historical contexts should be noted. If there is a particular author/researcher that has been central to the development of the instrument, note that influence/involvement. If it emerged out of a particular research line/discipline (educational psychologists working on locus of control, for example), note that.
5.	Theoretical framework	If a particular theoretical framework is cited, briefly describe that, and the citation where the theoretical framework is discussed.
6.	Definition of engagement	This is a place to put quotes/notes about the definition of engagement that the instrument seems to be based on and whether behavioral, emotional, cognitive engagement, or other similar terms are mentioned. Cite the source of the quotes or definition of engagement.
7.	Stated/intended purpose for engagement measure	This should be information that comes directly from the manual or seminal article/description of the development of the measure.

(CONTINUED)

TABLE B7 (CONTINUED)

Instrument-documentation protocol

Information domain	Directions
8. Populations of focus Intended grade levels (quote source) List populations for which use has been reported Norming or comparison information available	Describe here anything that is known about the populations of focus: For individual articles, cite the grade range used, racial composition, socioeconomic status, and so forth. From manual or by combining information from various sources, what is the intended or appropriate grade level for use (elementary, middle, high school, college)? Provide information on any national, representative samples that can be used for comparison purposes.
9. Description of constructs measured Quote from text with page citations	Describe here what the engagement measure is described as measuring. Use quotes where possible, and cite page numbers. Obtain a copy of the instrument and attach. If the instrument has one or more subscales that are all related to engagement, give their titles. For each of these, cite sample items.
10. Description of scoring/subscales/ reporting structure for engagement measure Mention unit of measurement (student, classroom, and so forth)	Describe here how the scoring/reporting occurs for the engagement measure. List engagement-related subscales with the number of items on each scale. Indicate the response format, for example, true/false, Likert-type, multiple choice, open ended. For Likert-type, cite the rating scale (for example, 0 to 4, where 0 is strongly disagree and 4 is strongly agree). Indicate if there are reverse-scored items included. How are scores computed?
11. Is the measure subject specific?	☐ No ☐ Yes, math ☐ Yes, science ☐ Yes, reading ☐ Yes, _____ (other)
12. Description of instrument method Describe relevant details of administration Describe variations in administration/guidance in manual available	☐ Student self-report ☐ Teacher rating of student ☐ Observation ☐ Other (_____) Provide a brief description of the details of administration (frequency, timing, and so forth). Provide a brief description of variations in administration reported and type of guidance provided in materials.
13. Description of logistics (Training required? How to access? Support available? Publicly available?)	Provide any relevant information that potential users would need to know (training, cost, support provided online/by developers, and so forth).
14. Reliability information reported by developer?	List any of the following included in the manual or in studies done by the developing author: ☐ Internal consistency/split-half reliability: Measures the correlation between the set of items on the subscale. Look for Cronbach's alpha. ☐ Test-retest reliability: Correlation between two (or more) administrations of the same item, scale, or instrument at different times. ☐ Inter-rater reliability: Correlation of scores between two or more observers or agreement between observers who rate the same item or behavior.

(CONTINUED)

TABLE B7 (CONTINUED)
Instrument-documentation protocol

Information domain	Directions
15. Reliability information reported by others? List studies/type of reliability	List any of the above reliability information provided in studies done by users of the instrument.
16. Validity information reported by developers?	List any of the following included in the manual or in studies done by the developing author:
Criterion-related validity—concurrent and predictive (Does engagement measure correlate with behaviors or predict achievement or other important outcome measures expected to be related to engagement [for example, attendance]?)	Describe any correlations reported between engagement measures and criterion-related behaviors (attendance, achievement, and so forth).
Construct validity (Do scores operate as expected if they were measuring what is intended?)	Indicate if a factor analysis was conducted to establish subscales and if the factor analyses supported the subscales used. Describe any correlations reported that show how the engagement measure relates to other constructs in expected ways or to other measures of the same construct. Describe how results from various methods for assessing engagement correlate.
17. Validity information reported by others?	List any of the above validity information provided in studies done by users of the instrument.
18. Overview of use	Using articles and additional sources included in the instrument folder, describe how the instrument has been used (diagnostic, evaluations, monitoring, basic research, and so forth) and by whom (for example, by developer, by researchers, by school districts).

Source: Authors.

APPENDIX C
STUDENT SELF-REPORT SUBSCALE INFORMATION

This appendix provides additional information on the student self-report measures, including the subscale names used and sample item wording (table C1), and shows the subscales, categorized by the three dimensions of engagement, used across student self-reports (table C2).

TABLE C1
Student self-report subscales and sample items

Instrument	Subscales/number of items	Sample item
4-H Study for Positive Youth Development	Behavioral engagement (5)	"How often do you come to class unprepared?"
	Emotional engagement (5)	"I feel happy to be part of school."
	Cognitive engagement (5)	"I want to learn as much as I can in school."
Academic Engagement Scale: Consortium on Chicago School Research (CCSR/AES)	Academic engagement (4 item)	"I work hard to do my best in this class."
Attitudes Towards Mathematics (ATM) Survey	Self-regulation (12)	"Before a quiz or exam, I plan out how to study the material."
	Deep cognitive strategy use (9)	"I work several examples of the same type of problem when studying mathematics so I can understand the problems better."
	Shallow cognitive strategy use (5)	"I find reviewing previously solved problems to be a good way to study for a test."
	Persistence (9)	"If I have trouble understanding a problem, I go over it again until I understand it."
Engagement versus Disaffection with Learning (EvsD)	Behavioral engagement (5)	"When I'm in class, I listen very carefully."
	Behavioral disaffection (5)	"When I'm in class, I just act like I'm working."
	Emotional engagement (5)	"I enjoy learning new things in class."
	Emotional disaffection (7)	"When we work on something in class, I feel discouraged."
High School Survey of Student Engagement (HSSSE)	Cognitive/intellectual/academic engagement (65)	"Thinking about this school year, how often have you done each of the following? (a) asked questions in class (b) contributed to class discussions (c) made a class presentation (d) prepared a draft of a paper or assignment before turning it in (e) received prompt feedback from teachers on assignments or other class work."
	Social/behavioral/participatory engagement (17)	"Thinking about this school year, how often have you done each of the following? (a) had conversations or worked on a project with at least one student of a race or ethnicity different from your own (b) picked on or bullied another student."
	Emotional engagement (39)	"How do you feel about the following statements related to your high school? (a) Overall, I feel good about being in this school. (b) I care about this school. (c) I feel safe in this school. (d) I have a voice in classroom and/or school decisions."

(CONTINUED)

TABLE C1 (CONTINUED)
Student self-report subscales and sample items

Instrument	Subscales/number of items	Sample item
Identification with School Questionnaire (ISQ)	Belongingness (9)	"School is one of my favorite places to be."
	Valuing (7)	"Most of the things we learn in class are useless."
Motivated Strategy and Learning Use Questionnaire (MSLQ)	Self-regulation (9)	"I outline the chapters in my book to help me study."
	Cognitive strategy use (13)	"I ask myself questions to make sure I know the material that I have been studying."
Motivation and Engagement Scale (MES)	Valuing school (4)	"Learning at school is important."
	Persistence (4)	"If I can't understand my schoolwork, I keep trying until I do."
	Planning (4)	"Before I start a project, I plan out how I'm going to do it."
	Study management (4)	"When I do homework, I usually do it where I can concentrate best."
	Disengagement (4)	"I've given up being interested in school."
Research Assessment Package for Schools (RAPS)	Ongoing engagement (5)	"I work hard on my schoolwork."
	Reaction to challenge (6)	"When something bad happens to me in school, I say the teacher did not cover the things on the test."
School Engagement Measure (SEM)-MacArthur	Behavioral engagement (5)	"I pay attention in class."
	Emotional engagement (6)	"I am interested in the work at school."
	Cognitive engagement (8)	"When I read a book, I ask myself questions to make sure I understand what it is about."
School Engagement Scale/ Questionnaire (SEQ)	School engagement scale (4 in 3 subject areas)	"How much time do you put into homework each week, including reading assignments?"
School Success Profile (SSP)	School engagement (3)	"I find school fun and exciting."
	Trouble avoidance (11)	"I turned in a homework assignment late or not at all."
Student Engagement Instrument (SEI)	Psychological engagement: teacher student relationships (9)	"Adults at my school listen to the students."
	Psychological engagement: peer support for learning (6)	"I have some friends at school."
	Psychological engagement: family support for learning (4)	"My family/guardian(s) are there for me when I need them."
	Cognitive engagement: control and relevance of schoolwork (9)	"The tests in my classes do a good job of measuring what I'm able to do."
	Cognitive engagement: future aspirations and goals (5)	"I am hopeful about my future."
Student School Engagement Survey (SSES)	Emotional engagement (16)	"I feel excited by the work in school."
	Cognitive engagement (22)	"How important do you think an education is?"
	Behavioral engagement (7)	"I get in trouble at school."

Source: Authors' compilation.

TABLE C2

Subscales used by student self-report instruments, by engagement dimension

Engagement dimension	Subscale
Behavioral	Behavioral engagement [a] Academic engagement Social/behavioral/participatory engagement Persistence[a,b] School Engagement Questionnaire Trouble avoidance Behavioral disaffection Ongoing engagement[c] Disengagement[c]
Emotional	Emotional engagement [a] Emotional disaffection Valuing[a] Belonging School engagement Psychological engagement—teacher-student relationships Psychological engagement—family support for learning Psychological engagement—peer support for learning Reaction to challenge
Cognitive	Cognitive engagement [a] Self-regulation[a] Cognitive strategy use Deep cognitive strategy use Shallow cognitive strategy use Planning Cognitive/intellectual/academic Study management Control and relevance of schoolwork Future aspirations and goals

a. Used by more than one instrument.

b. Also, considered an aspect of cognitive engagement.

c. Contains items reflecting both emotional and behavioral engagement.

Source: Authors' analysis of instrument subscales from table C1.

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